

TEST REPORT

Product : Single mode Bluetooth(5.0) Module
Trade mark : Richmat
Model/Type reference : HJ8258
Serial Model : /
Report Number : EED39P80336801
FCC ID : 2AJJGHJ8258
Date of Issue : March 29, 2023

Test Standards	Result
<input checked="" type="checkbox"/> 47 CFR Part 15 Subpart C	PASS

Prepared for:

Qingdao Richmat Intelligence Technology Inc
NO. 78 Kongquehe 4th Road Qingdao Clothing Industry park Jimo,
Qingdao, Shandong Province 266000, China

Prepared by:

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Date:

March 29, 2023

Jeff Fang

Authorized Signatory



EED39P80336801

Scan to check the authenticity

Check No.: 3052140323

Modification Record

No.	Last Report No.	Modification Description
1	EED39P80336801	First report

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1. Test Summary

Test item	Test Requirement	Test method	Result
Antenna Requirement*	47 CFR Part 15Subpart C Section 15.203/15.247 (c)	ANSI C63.10-2013	PASS
AC Power Line Conducted Emission*	47 CFR Part 15Subpart C Section 15.207	ANSI C63.10-2013	N/A
Maximum conducted output power*	47 CFR Part 15Subpart C Section 15.247 (b)(3)	ANSI C63.10-2013	PASS
DTS Bandwidth*	47 CFR Part 15Subpart C Section 15.247 (a)(2)	ANSI C63.10-2013	PASS
Maximum Power Spectral Density*	47 CFR Part 15Subpart C Section 15.247 (e)	ANSI C63.10-2013	PASS
Band-edge for RF Conducted Emissions*	47 CFR Part 15Subpart C Section 15.247(d)	ANSI C63.10-2013	PASS
RF Conducted Spurious Emissions*	47 CFR Part 15Subpart C Section 15.247(d)	ANSI C63.10-2013	PASS
Radiated Spurious Emissions	47 CFR Part 15Subpart C Section 15.205/15.209	ANSI C63.10-2013	PASS
Restricted bands around fundamental frequency (Radiated Emission)	47 CFR Part 15Subpart C Section 15.205/15.209	ANSI C63.10-2013	PASS

Remark:

1. The product is supplied by DC power.
2. Test according to ANSI C63.4-2014 & ANSI C63.10-2013.
3. Company Name and Address shown on Report, the sample(s) and sample Information was/ were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified.
4. "*" Detailed test results, please reference reported EED32M00310701

2. Test Requirement

2.1. Test Environment

Operating Environment:	
Temperature:	20.0°C
Humidity:	40.3% RH
Atmospheric Pressure:	1022mbar

2.2. Test Condition

Test channel:

Test Mode	Tx/Rx	RF Channel		
		Low(L)	Middle(M)	High(H)
GFSK	2402MHz ~2480 MHz	Channel 1	Channel 20	Channel 40
		2402MHz	2440MHz	2480MHz
Transmitting mode:		Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate.		

3. General Information

3.1. Client Information

Applicant:	Qingdao Richmat Intelligence Technology Inc
Address of Applicant:	NO. 78 Kongquehe 4th Road Qingdao Clothing Industry park Jimo, Qingdao, Shandong Province 266000, China
Manufacturer:	Qingdao Richmat Intelligence Technology Inc
Address of Manufacturer:	NO. 78 Kongquehe 4th Road Qingdao Clothing Industry park Jimo, Qingdao, Shandong Province 266000, China
Factory:	Qingdao Richmat Intelligence Technology Inc
Address of Factory:	NO. 78 Kongquehe 4th Road Qingdao Clothing Industry park Jimo, Qingdao, Shandong Province 266000, China

3.2. General Description of EUT

Product Name:	Single mode Bluetooth(5.0) Module
Model No.(EUT)*:	HJ8258
Trade Mark:	Richmat
EUT Supports Radios application:	Bluetooth V5.0 BLE
Power Supply:	Model No: ZB-H290020-B Input: AC100-240V 1.6A, 50/60Hz Output: DC 29.0V 2.0A 58W
Sample Received Date:	2023.03.14
Sample Tested Date:	2023.03.24

3.3. Product Specification subjective to this standard

Operation Frequency:	2402MHz~2480MHz
Bluetooth Version:	BLE 5.0
Modulation Type:	GFSK
Number of Channel:	40
Sample Type:	Mobile production
Test Software of EUT:	EMI_Tool (manufacturer declare)
Antenna Type:	PCB Antenna

Report No. : EED39P80336801

Antenna Gain ^① :	5.3dBi
Test Voltage:	AC 120V/60Hz

Note: 1 The antenna gain is provided by the client and we Centre Testing International (Suzhou) CO., LTD. test lab is not responsible for the accuracy of the antenna gain information.

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2402MHz	11	2422MHz	21	2442MHz	31	2462MHz
2	2404MHz	12	2424MHz	22	2444MHz	32	2464MHz
3	2406MHz	13	2426MHz	23	2446MHz	33	2466MHz
4	2408MHz	14	2428MHz	24	2448MHz	34	2468MHz
5	2410MHz	15	2430MHz	25	2450MHz	35	2470MHz
6	2412MHz	16	2432MHz	26	2452MHz	36	2472MHz
7	2414MHz	17	2434MHz	27	2454MHz	37	2474MHz
8	2416MHz	18	2436MHz	28	2456MHz	38	2476MHz
9	2418MHz	19	2438MHz	29	2458MHz	39	2478MHz
10	2420MHz	20	2440MHz	30	2460MHz	40	2480MHz

3.4. Tested System Details

Product	Manufacturer	Model No.
handset	Richmat	Model Name.: HJH55BA Ble /HJH173 Ble
They all use the same PCB. The circuit design, layout, components and wiring are identical, but the number of backlights used is different.		

3.5. Description of Support Units

The EUT has been tested with associated equipment below.

1) support equipment

Description	Manufacturer	Model No.	Certification	Supplied by
NB	ThinkPad	E490	FCC ID and DOC	CTI

3.6. Test Location

All test facilities used to collect the test data are located at Building 18, Zhihui New Town Ecological Industrial Park, No. 1206, Jinyang East Road, Lujia Town, Kunshan, Jiangsu, China.

3.7. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

A2LA-Lab Cert. No. 5734.01

Centre Testing International (Suzhou) CO., LTD. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration. Laboratories and any additional program requirements in the identified field of testing.

FCC-Designation No.:CN1290

Centre Testing International Group Co., Ltd EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The American association for Centre Testing International Group Co., Ltd. EMC laboratory accreditation Designation No.:CN1290

3.8. Deviation from Standards

None.

3.9. Abnormalities from Standard Conditions

None.

3.10. Other Information Requested by the Customer

None.

3.11. Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Occupied Bandwidth	0.56%
2	RF Power conducted	0.59 dB
3	Power Spectral Density, conducted	2.37 dB
4	Unwanted Emission, conducted	2.68 dB
5	All Emission, radiated	4.41 dB(30MHz-1GHz)
		4.99 dB(1GHz-18GHz)
		5.307 dB(18GHz-40GHz)
6	Temperature test	0.54°C
7	Humidity test	1.62%
8	DC and low frequency voltages test	1.14%

4. Equipment List

966 Semi-anechoic Chamber					
Equipment	Manufacturer	Mode No.	Serial Number	Cal. Date (yyyy-mm-dd)	Cal. Due date (yyyy-mm-dd)
Receiver	R&S	ESU8	100537	2022-12-05	2023-12-04
Spectrum analyzer	R&S	FSV40	101185	2022-12-05	2023-12-04
Preamplifier (30MHz~1GHz)	R&S	SCU-08	100748	2022-05-24	2023-05-23
Preamplifier (1GHz~18GHz)	R&S	SCU-18D	1987397	2022-12-08	2023-12-07
Preamplifier (18GHz~40GHz)	/	MTLNA1804003 0235	12009007	2022-10-14	2023-10-13
Loop Antenna (9kHz~30MHz)	TESEQ	HLA6121	54575	2023-02-26	2024-02-25
Antenna (30MHz~1GHz)	SCHWARZBECK	VULB9163	9163-965	2022-10-22	2023-10-21
Antenna (1GHz~18GHz)	R&S	HF907	102524	2022-12-13	2023-12-12
Antenna (18GHz~40GHz)	R&S	BBHA9170	1032	2022-10-16	2023-10-15
Band rejection filter	Xi'an xingbo	XBLBQ-DZA81	200827-1-02	/	/

5. Radio Technical Requirements Specification

5.1. Reference Documents for Testing

No.	Identity	Document Title
1	FCC Part15C	Subpart C-Intentional Radiators
2	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

5.2. Test Results List

Test requirement	Test method	Test item	Verdict	Note
Part15C Section 15.205/15.209	ANSI C63.10 Section 6.10.5	Restricted bands around fundamental frequency (Radiated Emission)	PASS	Appendix A)
Part15C Section 15.205/15.209	ANSI C63.10 Section 6.4,6.5,6.6	Radiated Spurious Emissions	PASS	Appendix B)

Appendix A): Restricted bands around fundamental frequency (Radiated)

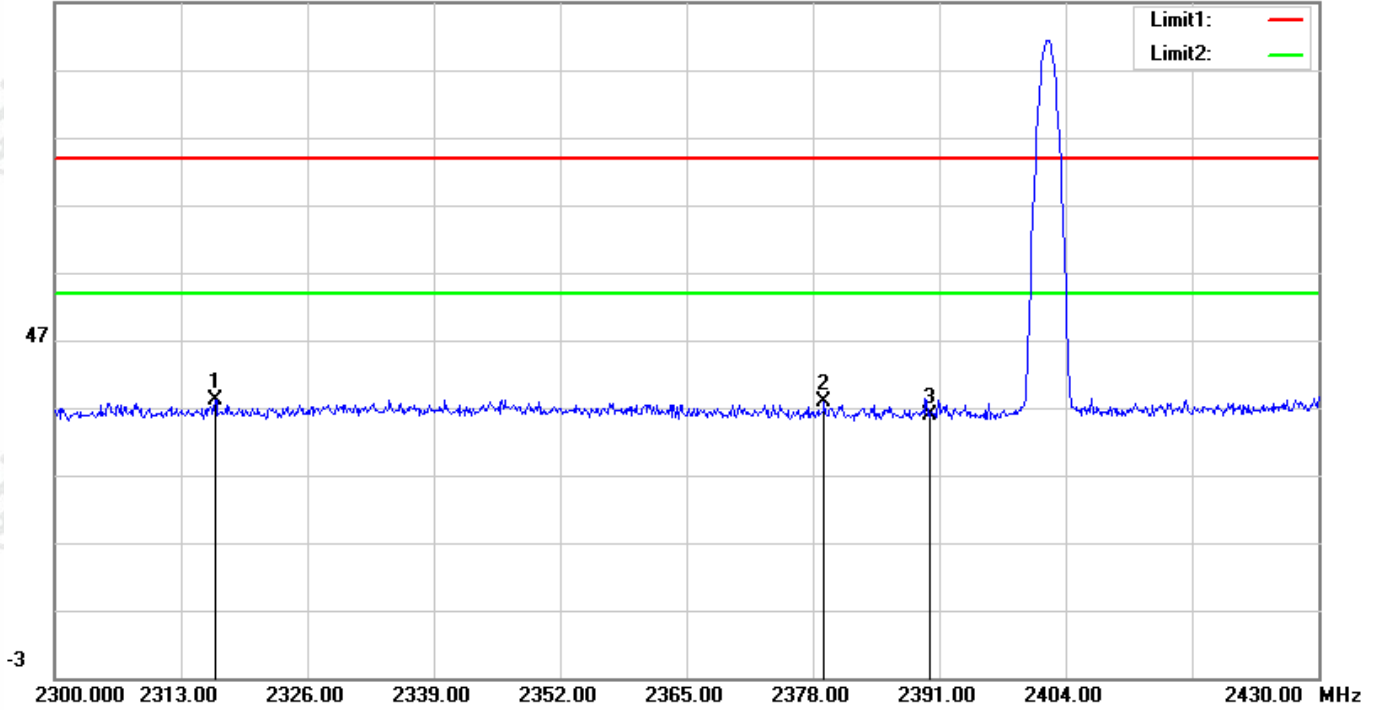
Receiver Setup:	<table border="1"> <thead> <tr> <th>Frequency</th> <th>Detector</th> <th>RBW</th> <th>VBW</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td>30MHz-1GHz</td> <td>Quasi-peak</td> <td>120kHz</td> <td>300kHz</td> <td>Quasi-peak</td> </tr> <tr> <td rowspan="2">Above 1GHz</td> <td>Peak</td> <td>1MHz</td> <td>3MHz</td> <td>Peak</td> </tr> <tr> <td>Peak</td> <td>1MHz</td> <td>1/T</td> <td>Average</td> </tr> </tbody> </table>	Frequency	Detector	RBW	VBW	Remark	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak	Above 1GHz	Peak	1MHz	3MHz	Peak	Peak	1MHz	1/T	Average	
Frequency	Detector	RBW	VBW	Remark																	
30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak																	
Above 1GHz	Peak	1MHz	3MHz	Peak																	
	Peak	1MHz	1/T	Average																	
Test Procedure:	<p>Below 1GHz test procedure as below:</p> <ol style="list-style-type: none"> The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable was turned from 0 degrees to 360 degrees to find the maximum reading. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel <p>Above 1GHz test procedure as below:</p> <ol style="list-style-type: none"> Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter). Test the EUT in the lowest channel , the Highest channel The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case. Repeat above procedures until all frequencies measured was complete. 																				
Limit:	<table border="1"> <thead> <tr> <th>Frequency</th> <th>Limit (dBμV/m @3m)</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td>30MHz-88MHz</td> <td>40.0</td> <td>Quasi-peak Value</td> </tr> <tr> <td>88MHz-216MHz</td> <td>43.5</td> <td>Quasi-peak Value</td> </tr> <tr> <td>216MHz-960MHz</td> <td>46.0</td> <td>Quasi-peak Value</td> </tr> <tr> <td>960MHz-1GHz</td> <td>54.0</td> <td>Quasi-peak Value</td> </tr> <tr> <td rowspan="2">Above 1GHz</td> <td>54.0</td> <td>Average Value</td> </tr> <tr> <td>74.0</td> <td>Peak Value</td> </tr> </tbody> </table>	Frequency	Limit (dB μ V/m @3m)	Remark	30MHz-88MHz	40.0	Quasi-peak Value	88MHz-216MHz	43.5	Quasi-peak Value	216MHz-960MHz	46.0	Quasi-peak Value	960MHz-1GHz	54.0	Quasi-peak Value	Above 1GHz	54.0	Average Value	74.0	Peak Value
Frequency	Limit (dB μ V/m @3m)	Remark																			
30MHz-88MHz	40.0	Quasi-peak Value																			
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216MHz-960MHz	46.0	Quasi-peak Value																			
960MHz-1GHz	54.0	Quasi-peak Value																			
Above 1GHz	54.0	Average Value																			
	74.0	Peak Value																			

Test plot as follows:

Mode:	BLE_1M	Channel:	2402
Remark:	Horizontal	Test model No.:	HJH55BA Ble

Test Graph

97.0 dBuV/m

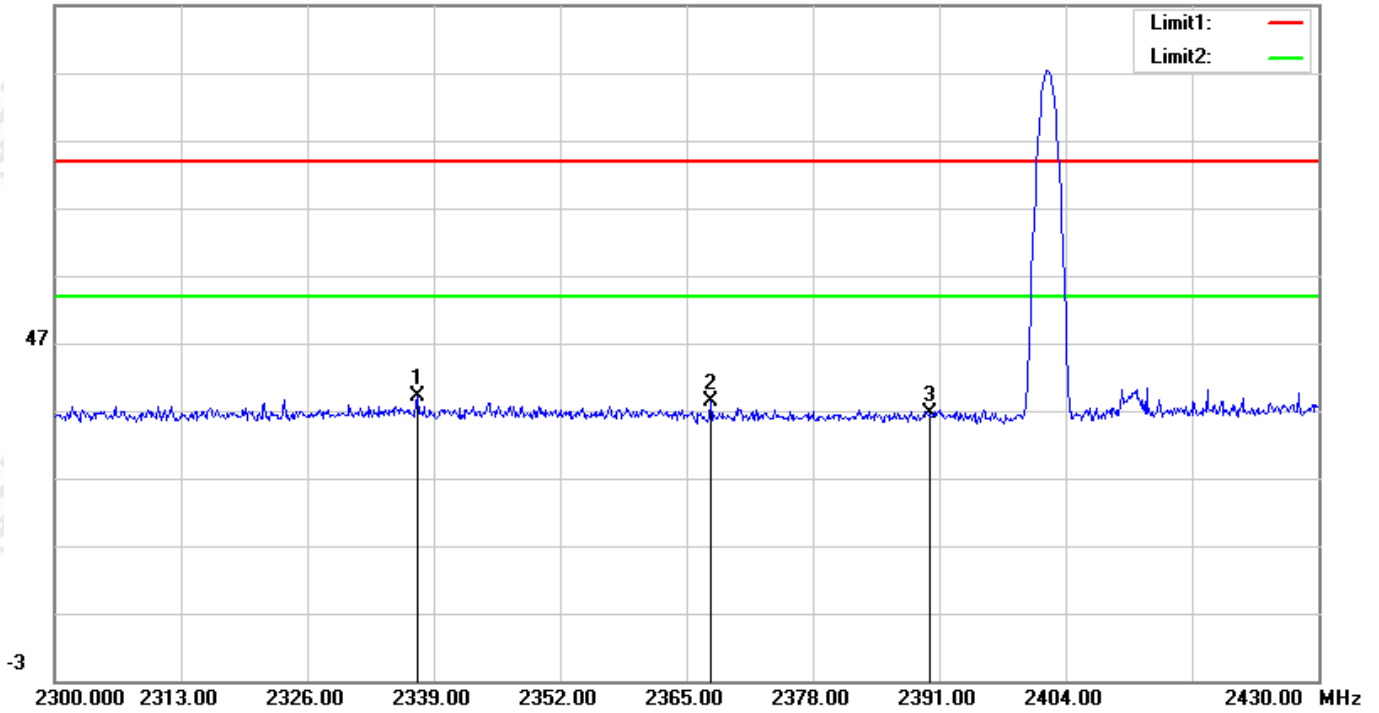


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2316.510	35.64	2.51	38.15	74.00	-35.85	200	61	peak
2	2379.170	35.31	2.68	37.99	74.00	-36.01	200	79	peak
3	2390.000	33.07	2.71	35.78	74.00	-38.22	200	203	peak

Mode:	BLE_1M	Channel:	2402
Remark:	Vertical	Test model No.:	HJH55BA Ble

Test Graph

97.0 dBuV/m

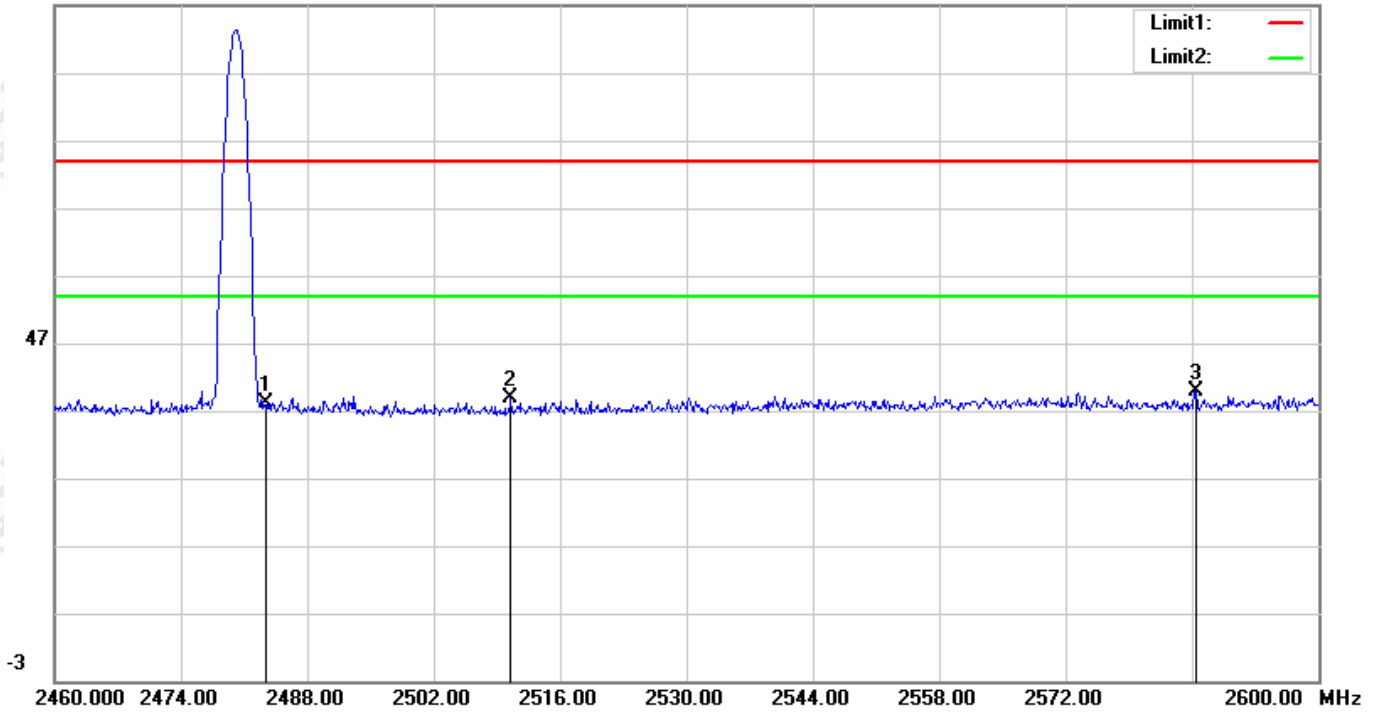


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2337.310	36.57	2.57	39.14	74.00	-34.86	162	0	peak
2	2367.470	35.67	2.65	38.32	74.00	-35.68	167	0	peak
3	2390.000	33.96	2.71	36.67	74.00	-37.33	200	223	peak

Mode:	BLE_1M	Channel:	2480
Remark:	Horizontal	Test model No.:	HJH55BA Ble

Test Graph

97.0 dBuV/m

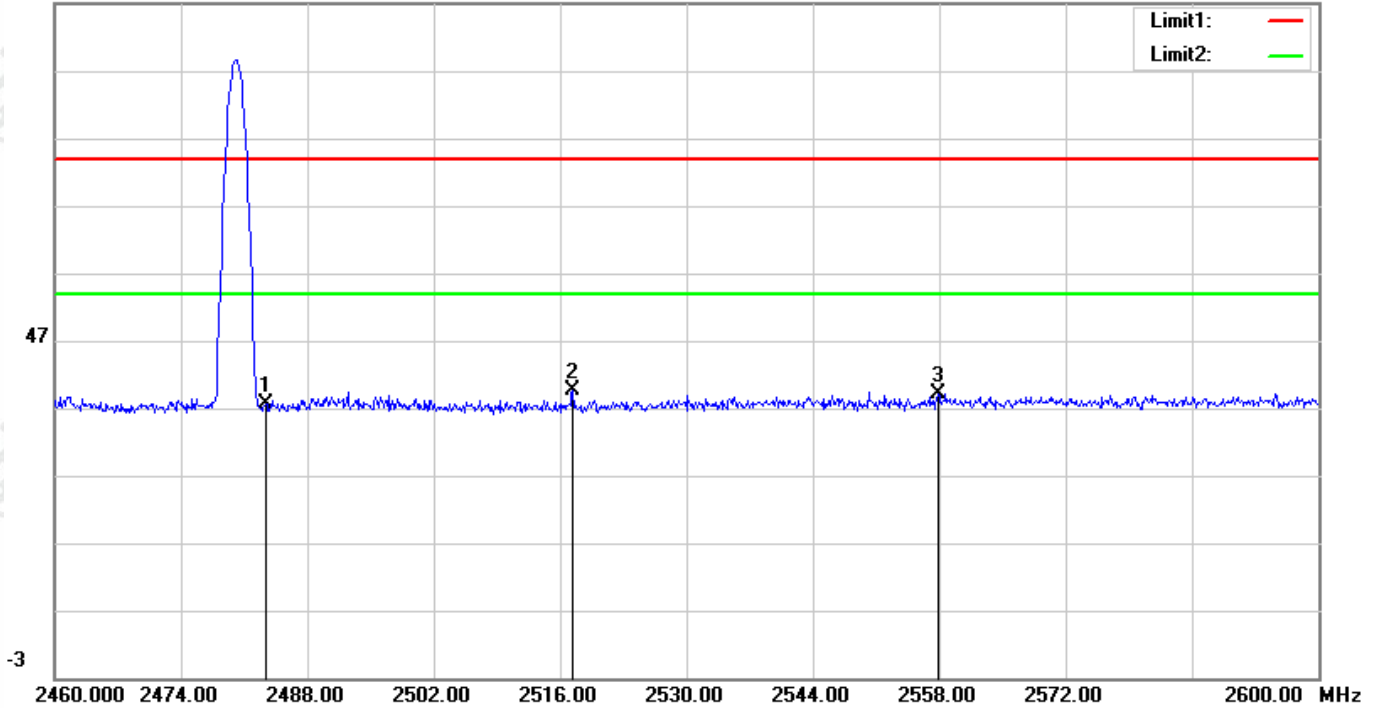


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	35.17	2.92	38.09	74.00	-35.91	200	292	peak
2	2510.540	35.83	2.97	38.80	74.00	-35.20	145	0	peak
3	2586.420	36.81	3.13	39.94	74.00	-34.06	200	329	peak

Mode:	BLE_1M	Channel:	2480
Remark:	Vertical	Test model No.:	HJH55BA Ble

Test Graph

97.0 dBuV/m

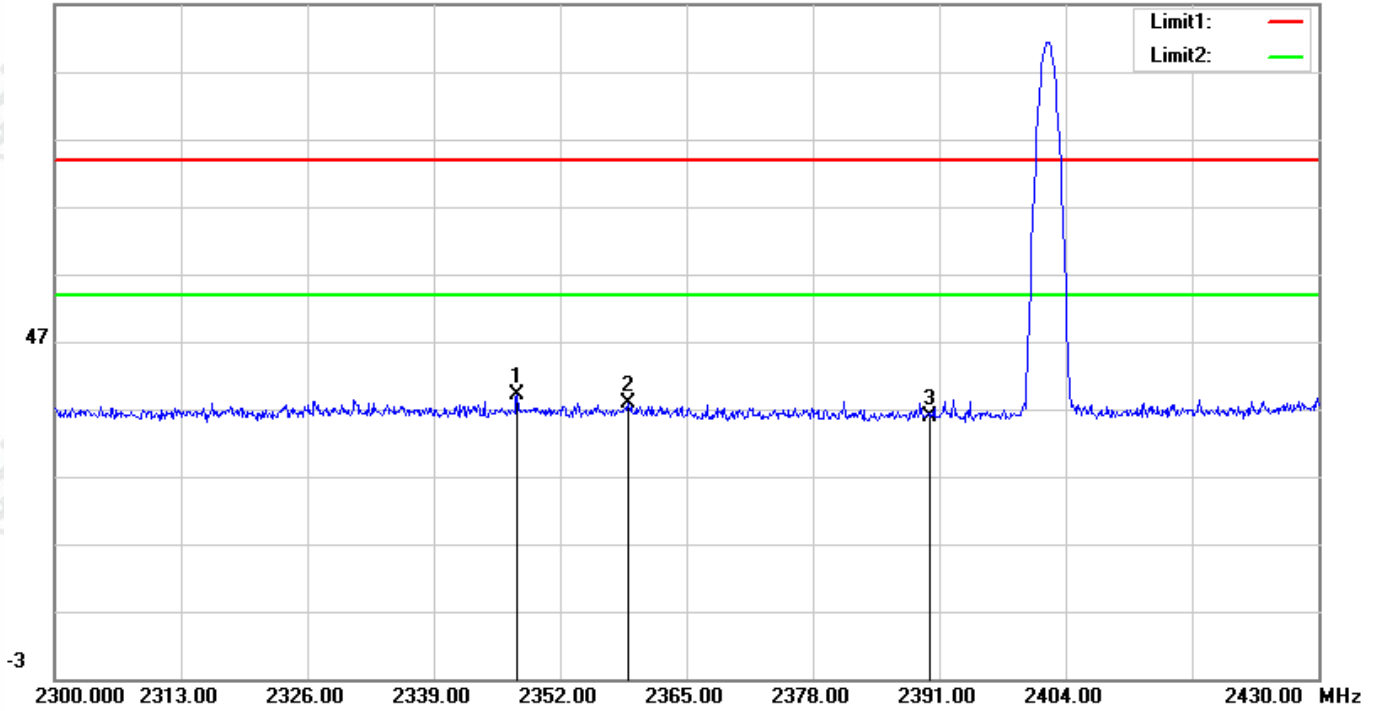


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	34.68	2.92	37.60	74.00	-36.40	200	345	peak
2	2517.400	36.59	2.99	39.58	74.00	-34.42	163	0	peak
3	2557.860	36.01	3.07	39.08	74.00	-34.92	200	3	peak

Mode:	BLE_2M	Channel:	2402
Remark:	Horizontal	Test model No.:	HJH55BA Ble

Test Graph

97.0 dBuV/m

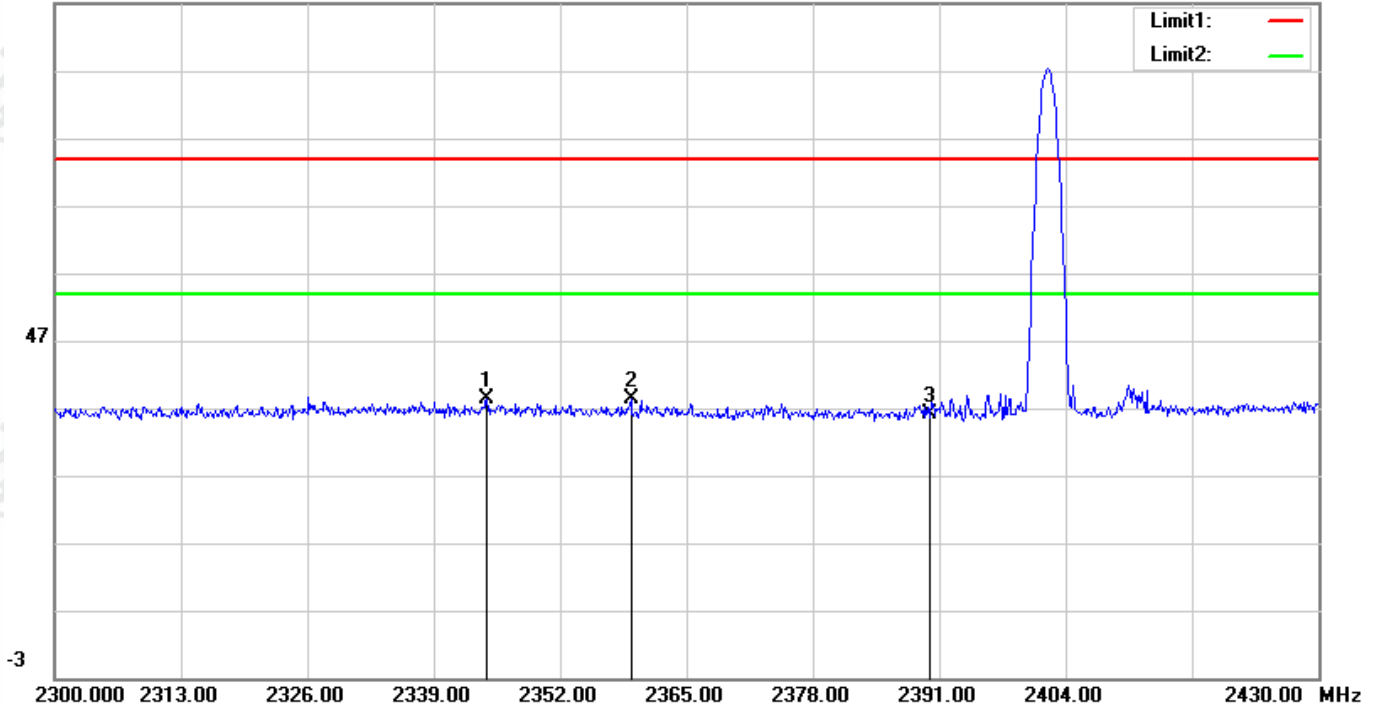


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2347.580	36.52	2.60	39.12	74.00	-34.88	100	133	peak
2	2359.020	35.17	2.63	37.80	74.00	-36.20	200	145	peak
3	2390.000	33.26	2.71	35.97	74.00	-38.03	100	0	peak

Mode:	BLE_2M	Channel:	2402
Remark:	Vertical	Test model No.:	HJH55BA Ble

Test Graph

97.0 dBuV/m

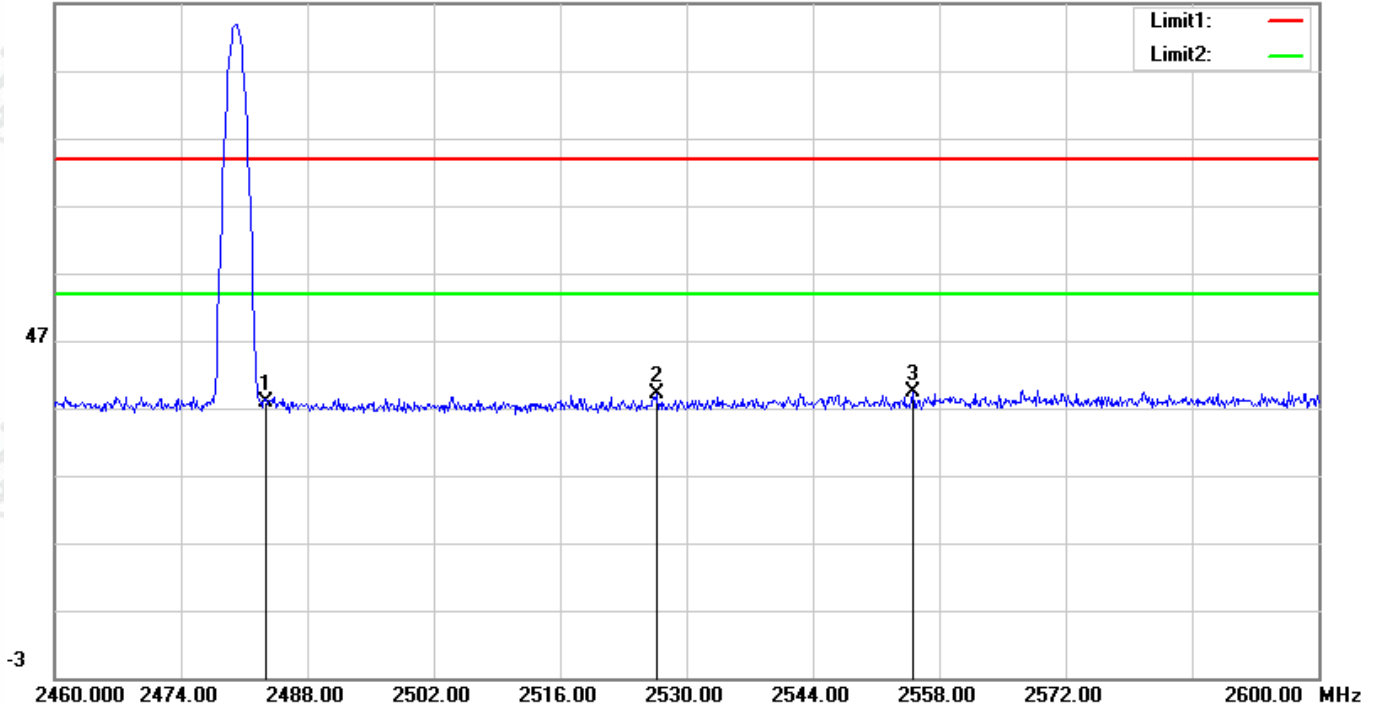


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2344.460	35.68	2.59	38.27	74.00	-35.73	200	137	peak
2	2359.280	35.65	2.63	38.28	74.00	-35.72	200	316	peak
3	2390.000	33.39	2.71	36.10	74.00	-37.90	100	287	peak

Mode:	BLE_2M	Channel:	2480
Remark:	Horizontal	Test model No.:	HJH55BA Ble

Test Graph

97.0 dBuV/m

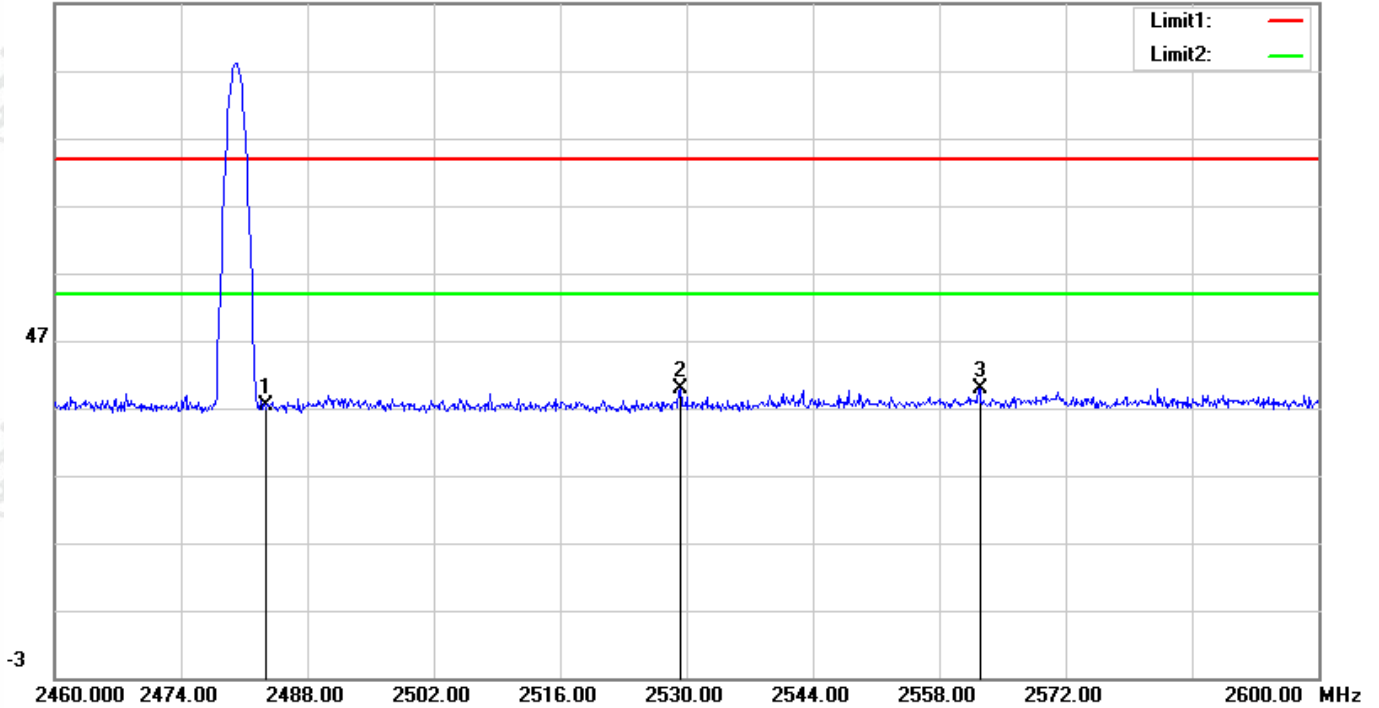


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	34.98	2.92	37.90	74.00	-36.10	200	52	peak
2	2526.640	36.04	3.01	39.05	74.00	-34.95	161	0	peak
3	2555.060	36.25	3.07	39.32	74.00	-34.68	171	0	peak

Mode:	BLE_2M	Channel:	2480
Remark:	Vertical	Test model No.:	HJH55BA Ble

Test Graph

97.0 dBuV/m

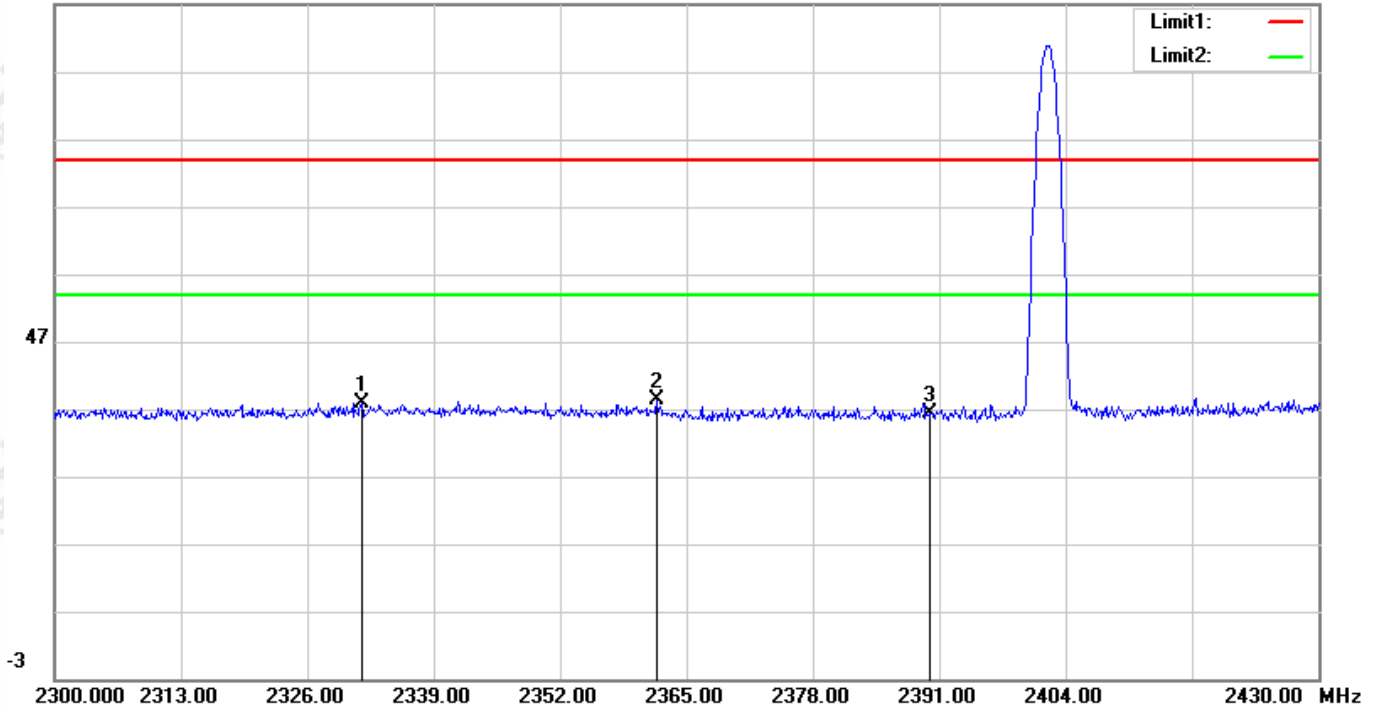


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	34.53	2.92	37.45	74.00	-36.55	100	245	peak
2	2529.300	36.78	3.01	39.79	74.00	-34.21	182	0	peak
3	2562.480	36.81	3.08	39.89	74.00	-34.11	100	2	peak

Mode:	BLE_125kbps	Channel:	2402
Remark:	Horizontal	Test model No.:	HJH55BA Ble

Test Graph

97.0 dBuV/m

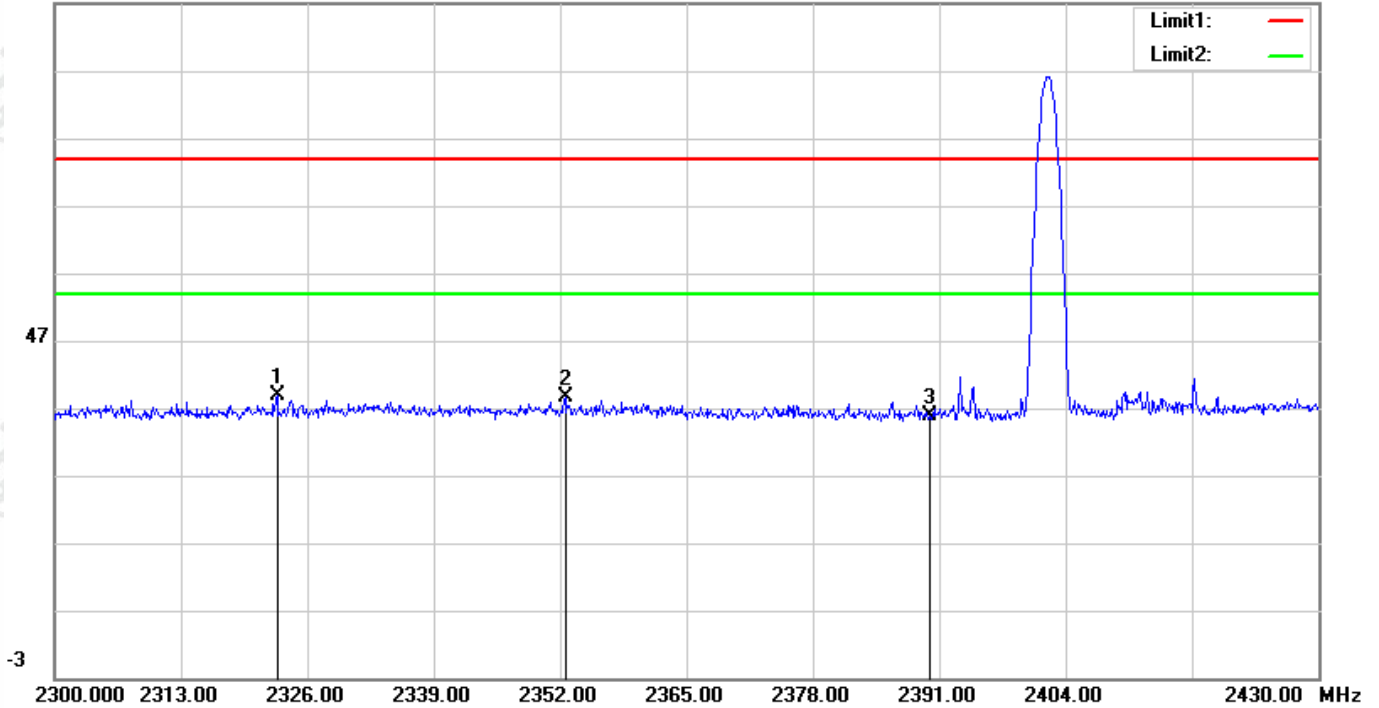


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2331.590	35.27	2.56	37.83	74.00	-36.17	200	101	peak
2	2361.880	35.85	2.64	38.49	74.00	-35.51	200	354	peak
3	2390.000	33.63	2.71	36.34	74.00	-37.66	200	302	peak

Mode:	BLE_125kbps	Channel:	2402
Remark:	Vertical	Test model No.:	HJH55BA Ble

Test Graph

97.0 dBuV/m

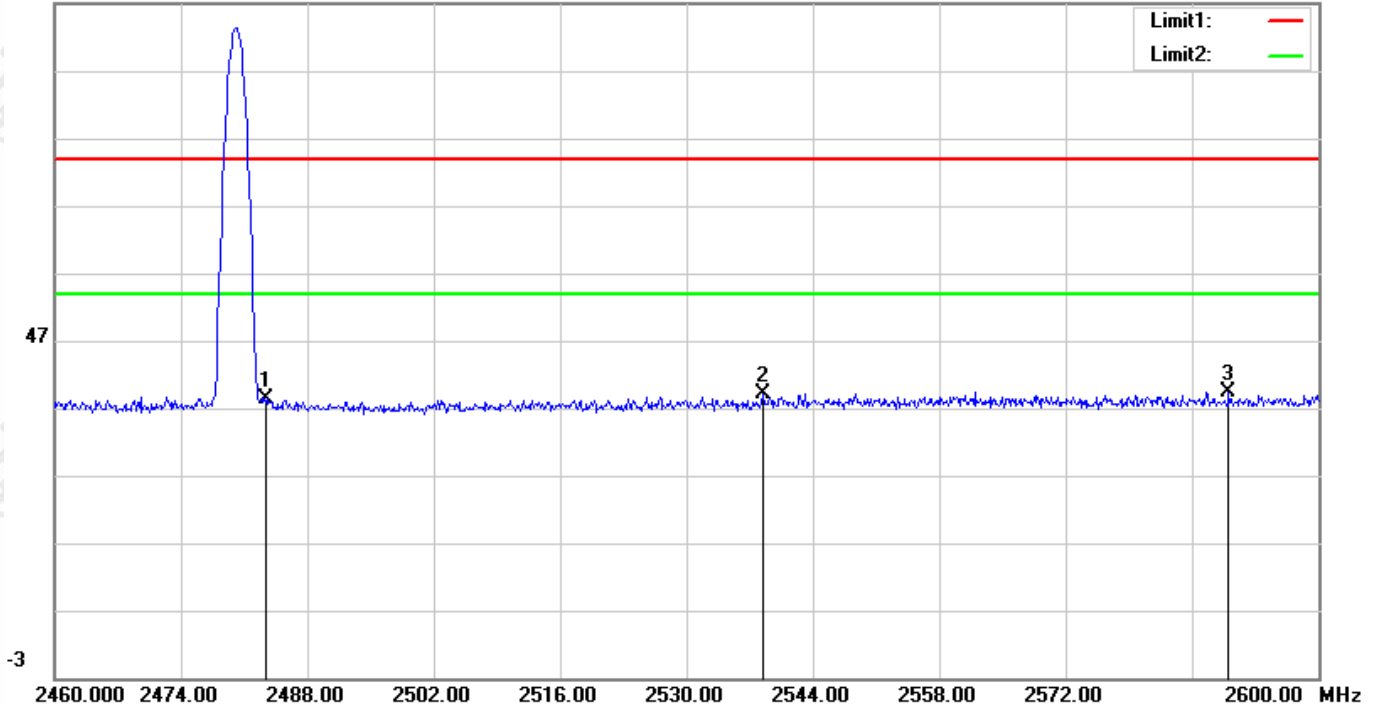


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2322.880	36.43	2.53	38.96	74.00	-35.04	200	167	peak
2	2352.520	36.13	2.61	38.74	74.00	-35.26	200	161	peak
3	2390.000	33.13	2.71	35.84	74.00	-38.16	200	289	peak

Mode:	BLE_125kbps	Channel:	2480
Remark:	Horizontal	Test model No.:	HJH55BA Ble

Test Graph

97.0 dBuV/m

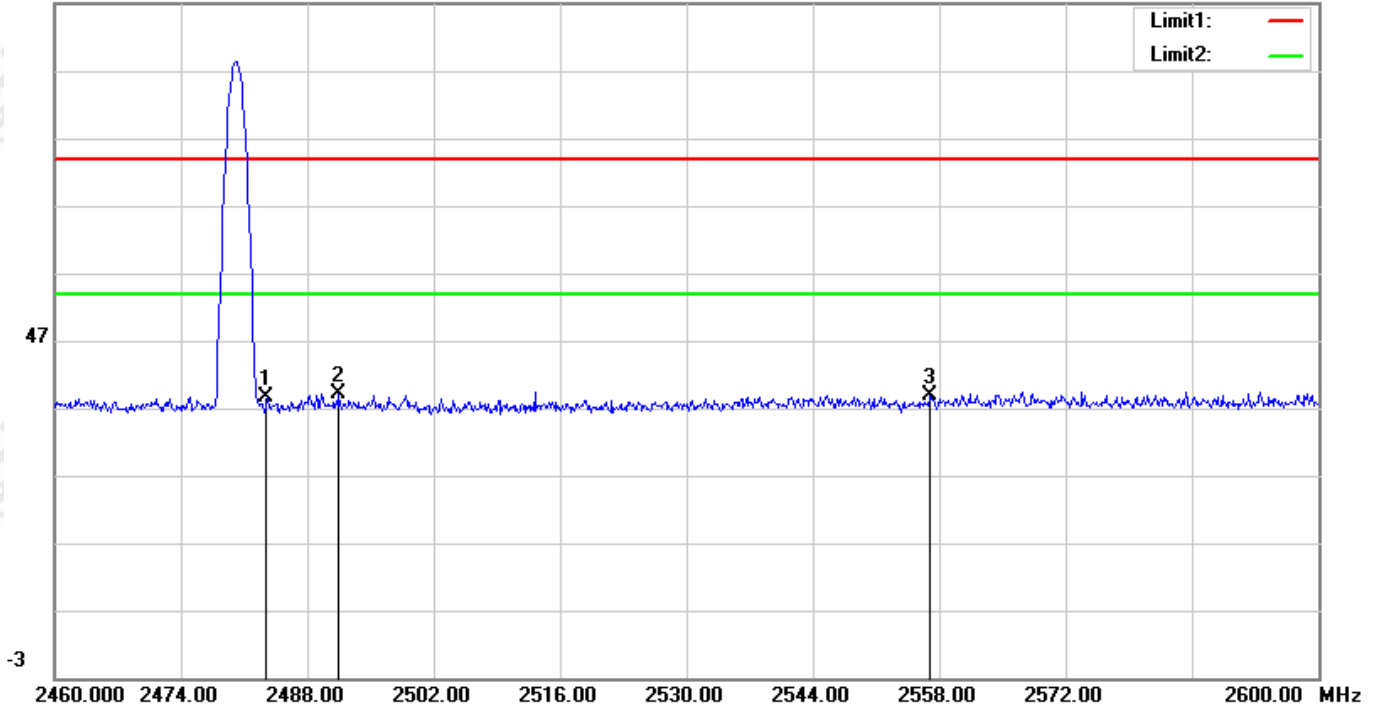


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	35.44	2.92	38.36	74.00	-35.64	200	306	peak
2	2538.540	36.02	3.03	39.05	74.00	-34.95	100	139	peak
3	2590.060	36.35	3.14	39.49	74.00	-34.51	200	281	peak

Mode:	BLE_125kbps	Channel:	2480
Remark:	Vertical	Test model No.:	HJH55BA Ble

Test Graph

97.0 dBuV/m

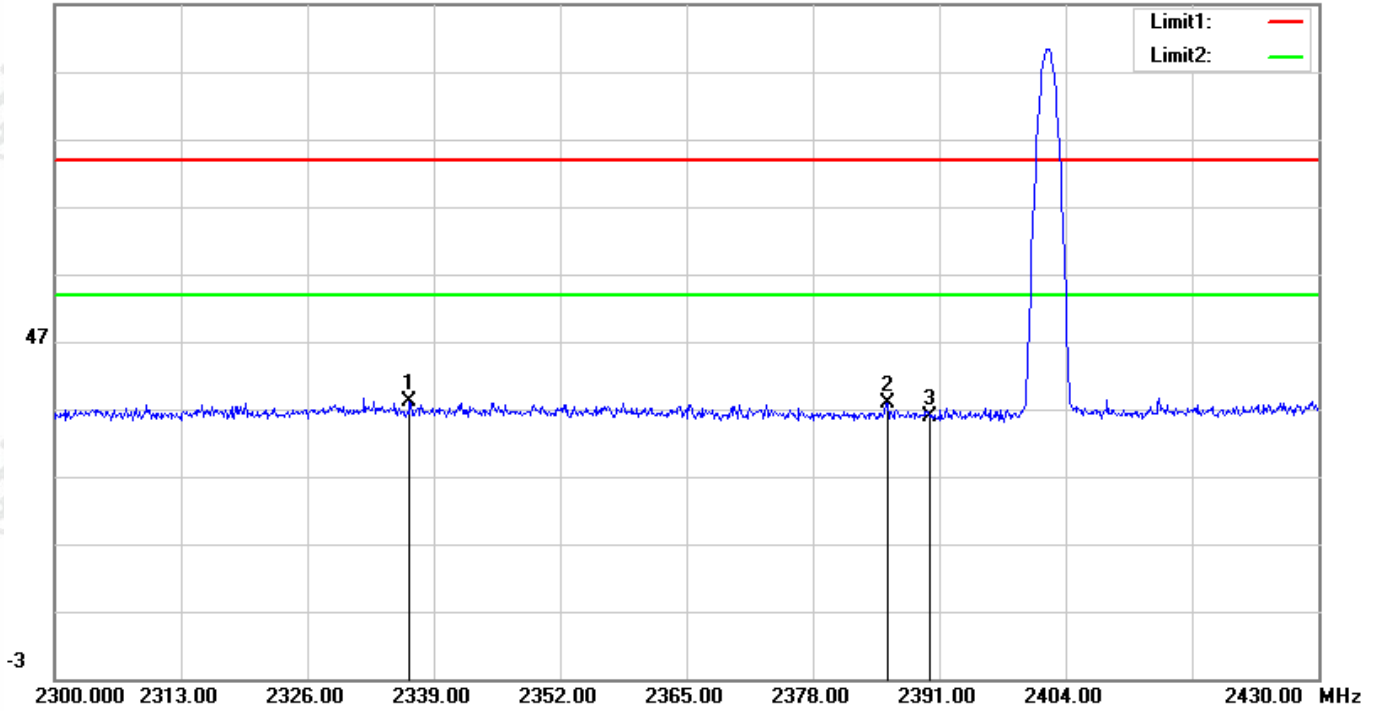


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	35.62	2.92	38.54	74.00	-35.46	200	27	peak
2	2491.500	36.24	2.93	39.17	74.00	-34.83	200	139	peak
3	2557.020	35.75	3.07	38.82	74.00	-35.18	100	124	peak

Mode:	BLE_500kbps	Channel:	2402
Remark:	Horizontal	Test model No.:	HJH55BA Ble

Test Graph

97.0 dBuV/m

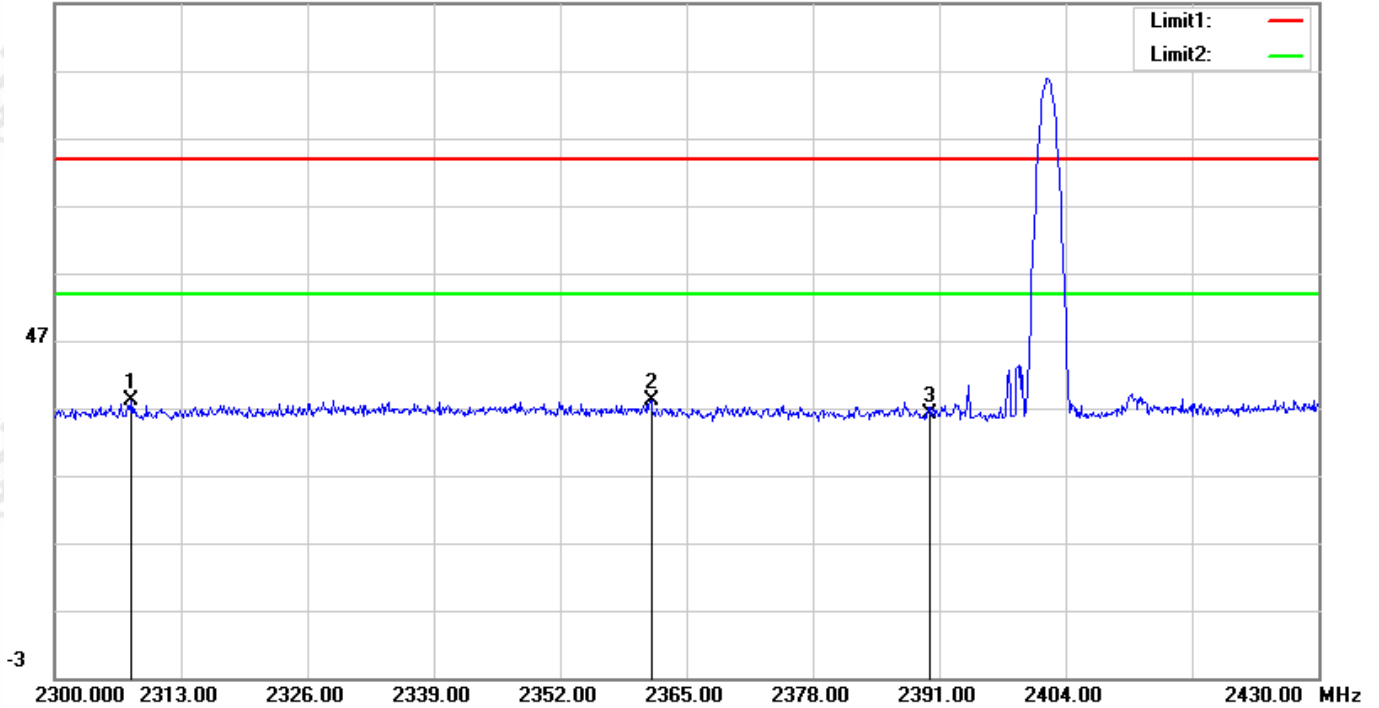


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2336.530	35.48	2.57	38.05	74.00	-35.95	200	343	peak
2	2385.670	35.08	2.70	37.78	74.00	-36.22	127	0	peak
3	2390.000	33.27	2.71	35.98	74.00	-38.02	121	0	peak

Mode:	BLE_500kbps	Channel:	2402
Remark:	Vertical	Test model No.:	HJH55BA Ble

Test Graph

97.0 dBuV/m

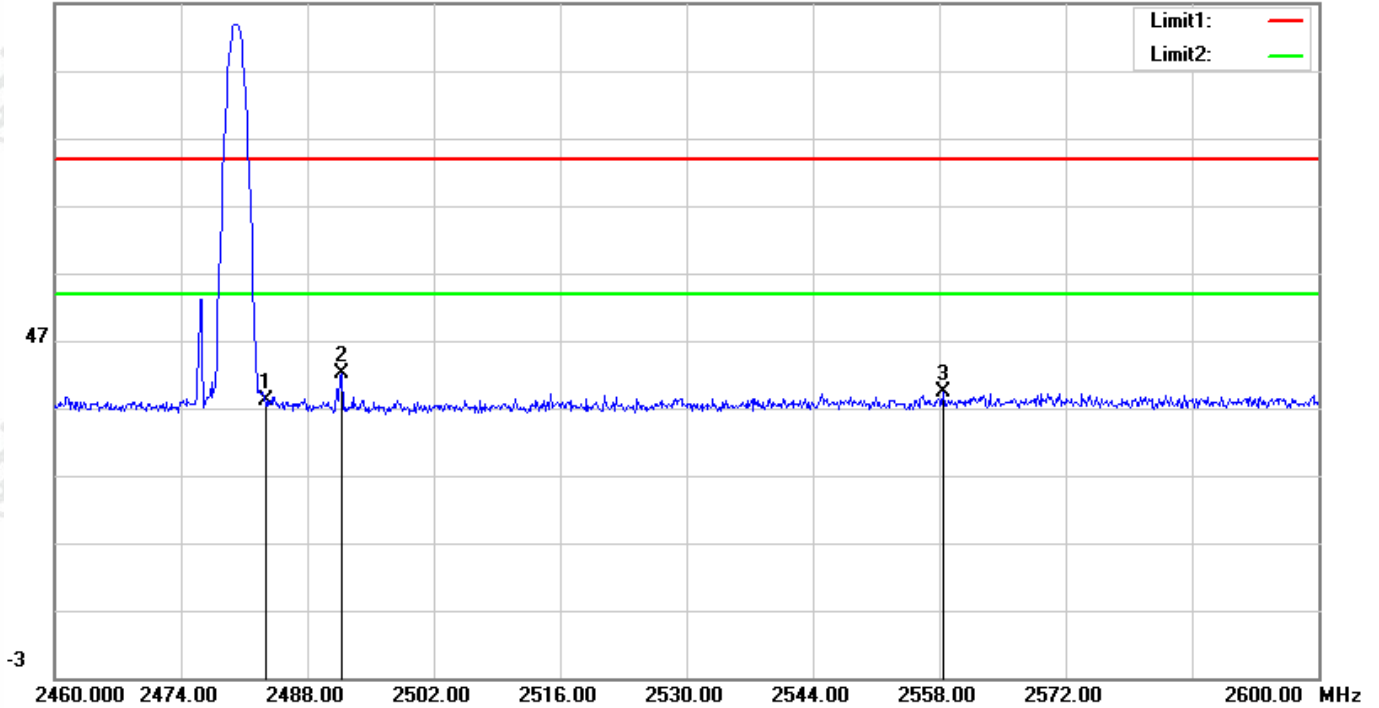


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2307.930	35.61	2.49	38.10	74.00	-35.90	200	159	peak
2	2361.360	35.58	2.64	38.22	74.00	-35.78	200	147	peak
3	2390.000	33.51	2.71	36.22	74.00	-37.78	200	197	peak

Mode:	BLE_500kbps	Channel:	2480
Remark:	Horizontal	Test model No.:	HJH55BA Ble

Test Graph

97.0 dBuV/m

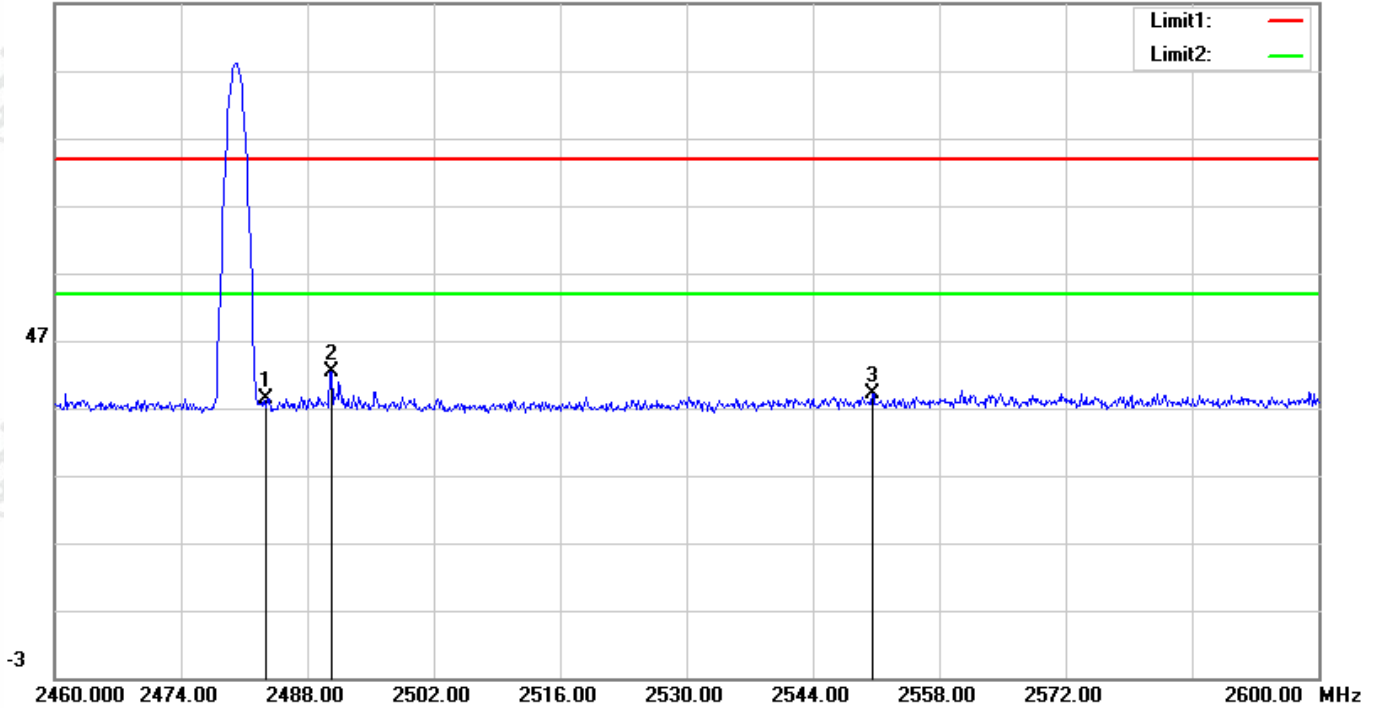


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	35.10	2.92	38.02	74.00	-35.98	200	236	peak
2	2491.780	39.10	2.93	42.03	74.00	-31.97	100	212	peak
3	2558.420	36.21	3.07	39.28	74.00	-34.72	115	0	peak

Mode:	BLE_500kbps	Channel:	2480
Remark:	Vertical	Test model No.:	HJH55BA Ble

Test Graph

97.0 dBuV/m

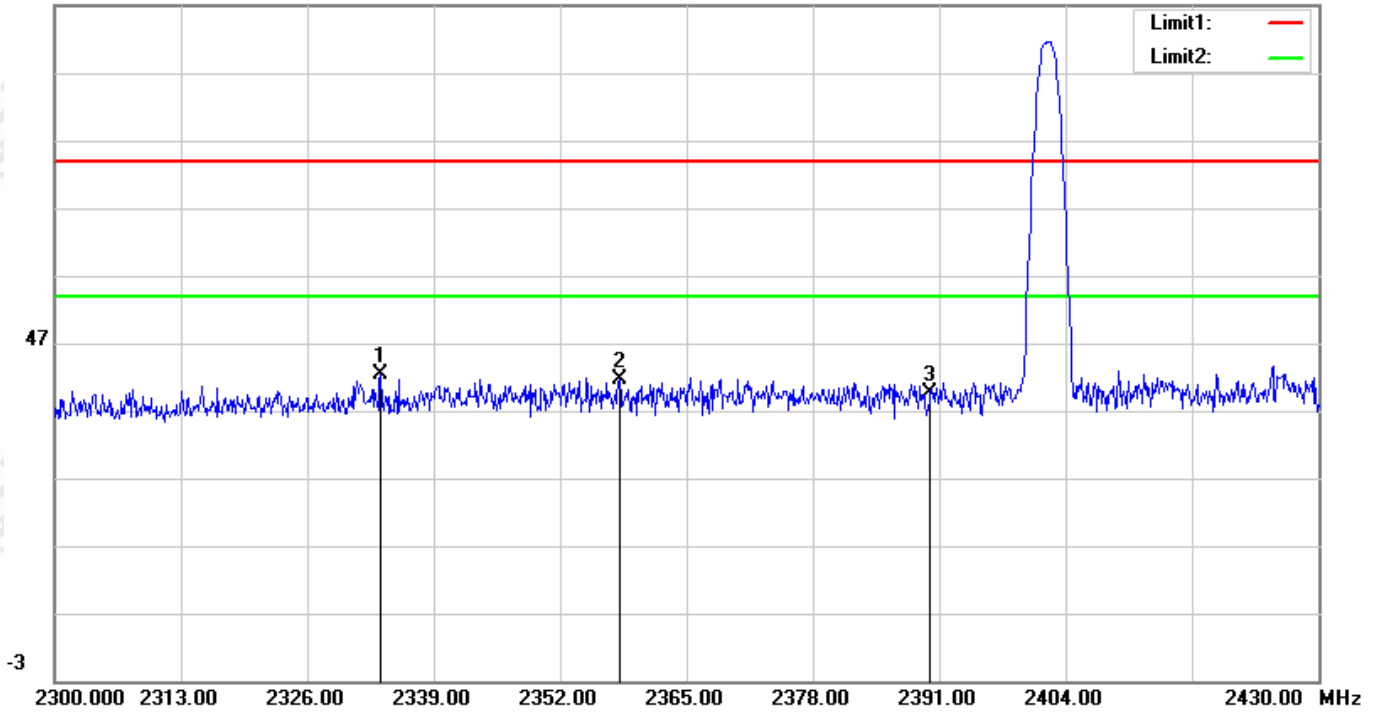


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	35.46	2.92	38.38	74.00	-35.62	200	29	peak
2	2490.660	39.52	2.93	42.45	74.00	-31.55	200	114	peak
3	2550.580	36.06	3.06	39.12	74.00	-34.88	101	0	peak

Mode:	BLE_1M	Channel:	2402
Remark:	Horizontal	Test model No.:	HJH173 Ble

Test Graph

97.0 dBuV/m

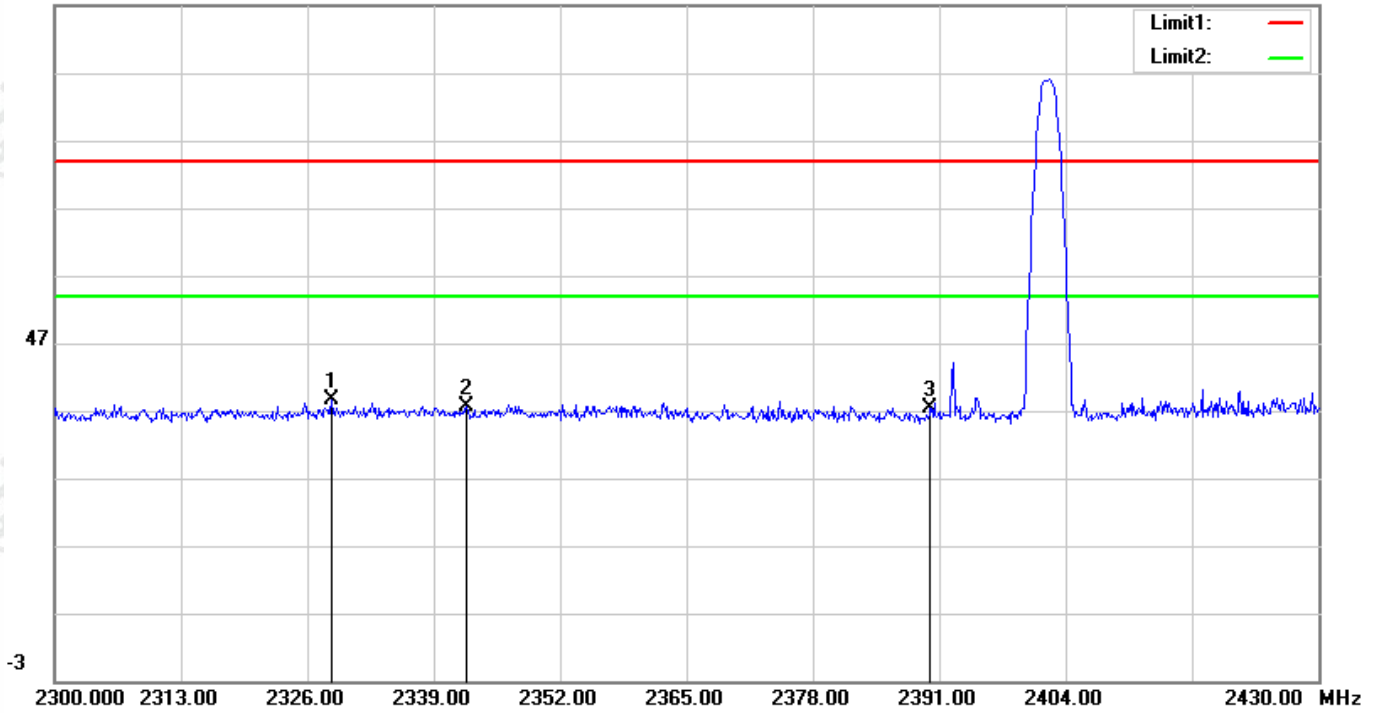


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2333.540	39.86	2.56	42.42	74.00	-31.58	200	302	peak
2	2358.110	38.98	2.63	41.61	74.00	-32.39	200	313	peak
3	2390.000	36.95	2.71	39.66	74.00	-34.34	200	224	peak

Mode:	BLE_1M	Channel:	2402
Remark:	Vertical	Test model No.:	HJH173 Ble

Test Graph

97.0 dBuV/m

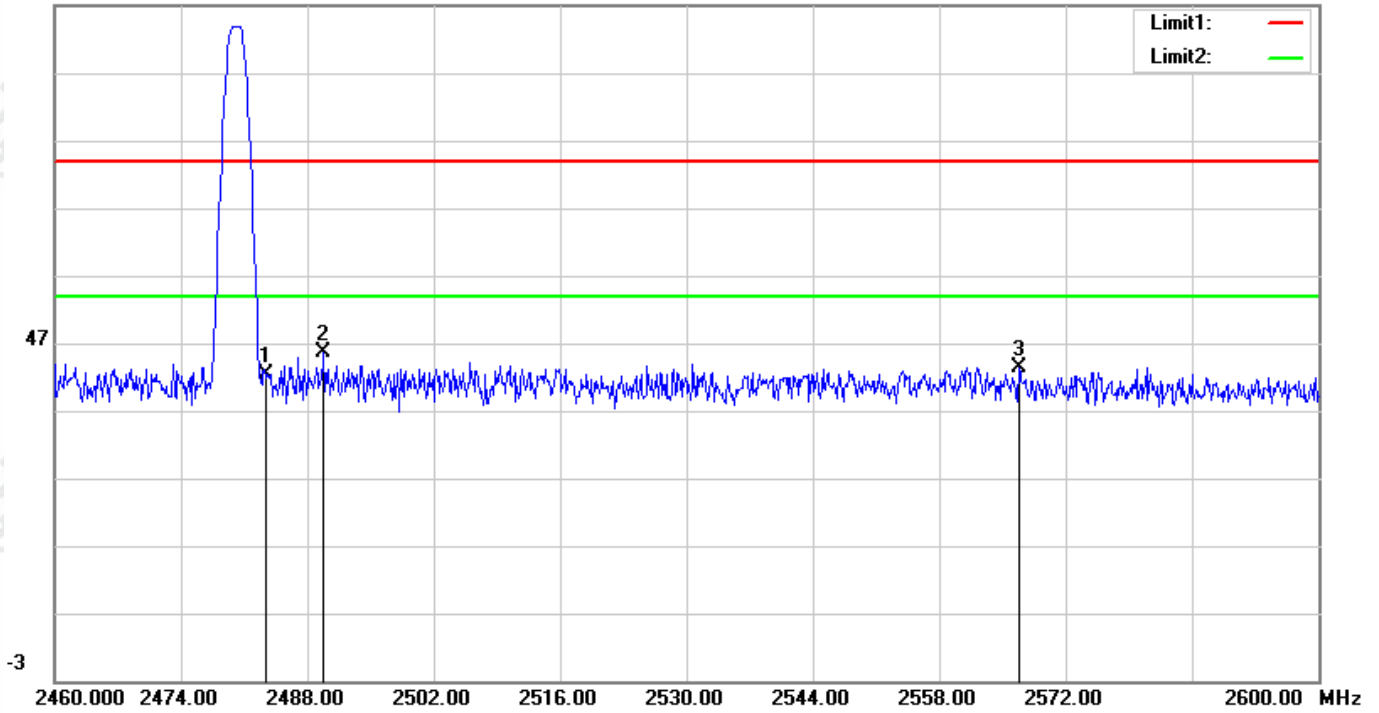


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2328.470	36.07	2.55	38.62	74.00	-35.38	200	309	peak
2	2342.380	35.02	2.58	37.60	74.00	-36.40	200	341	peak
3	2390.000	34.67	2.71	37.38	74.00	-36.62	117	0	peak

Mode:	BLE_1M	Channel:	2480
Remark:	Horizontal	Test model No.:	HJH173 Ble

Test Graph

97.0 dBuV/m

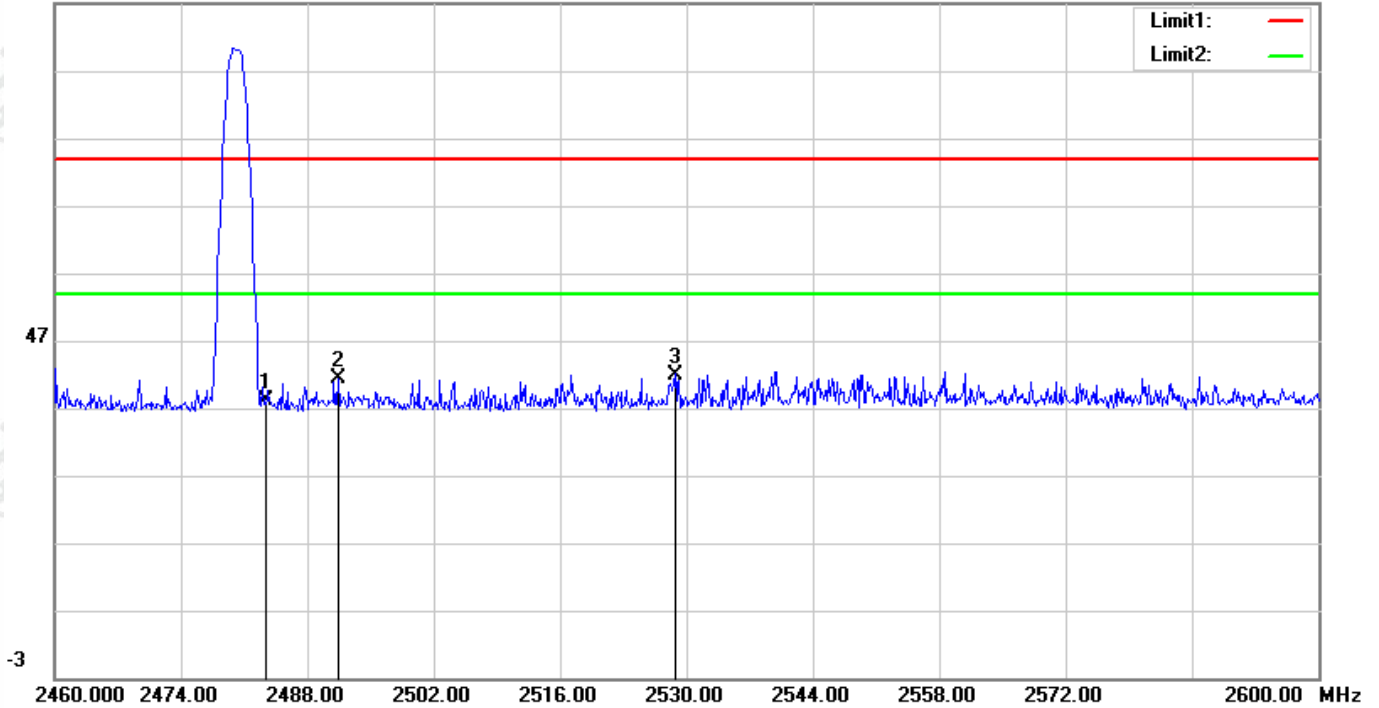


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	39.41	2.92	42.33	74.00	-31.67	100	22	peak
2	2489.820	42.58	2.93	45.51	74.00	-28.49	200	308	peak
3	2566.820	40.40	3.09	43.49	74.00	-30.51	200	308	peak

Mode:	BLE_1M	Channel:	2480
Remark:	Vertical	Test model No.:	HJH173 Ble

Test Graph

97.0 dBuV/m

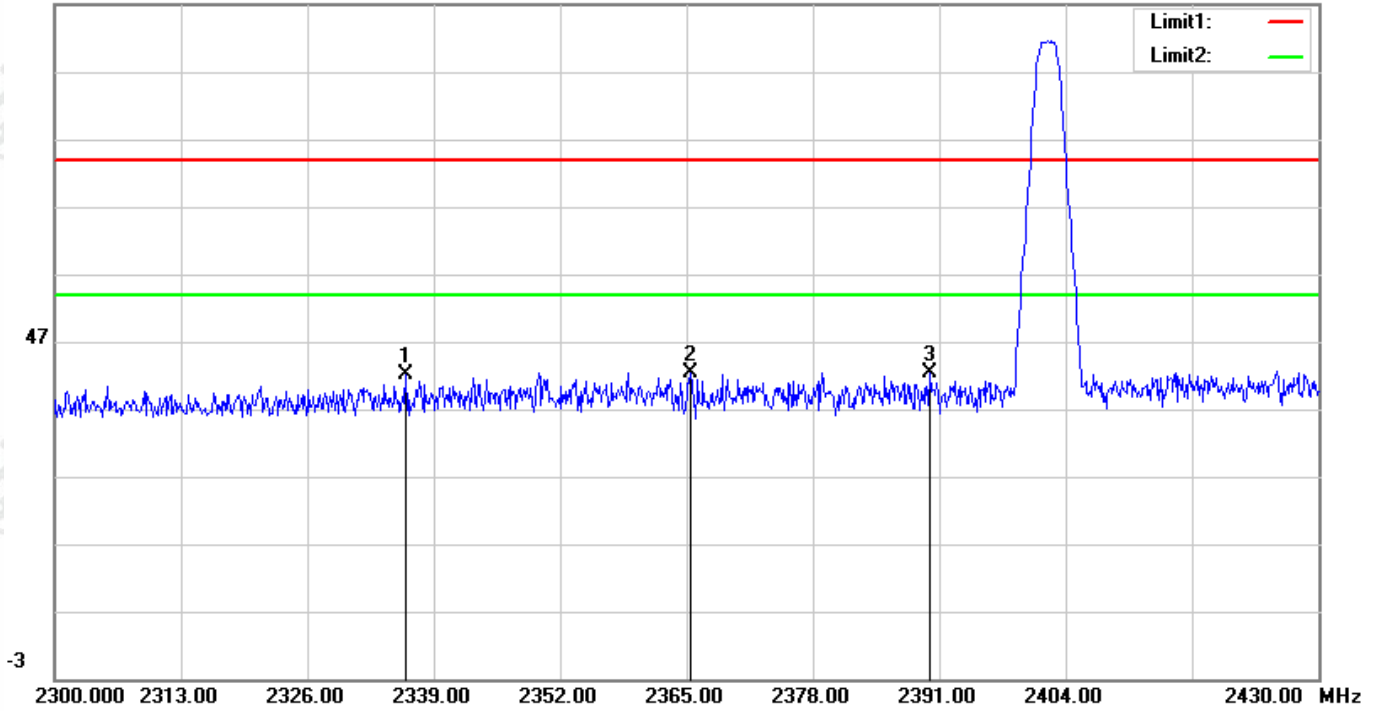


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	35.23	2.92	38.15	74.00	-35.85	199	0	peak
2	2491.500	38.49	2.93	41.42	74.00	-32.58	200	92	peak
3	2528.740	38.99	3.01	42.00	74.00	-32.00	200	345	peak

Mode:	BLE_2M	Channel:	2402
Remark:	Horizontal	Test model No.:	HJH173 Ble

Test Graph

97.0 dBuV/m

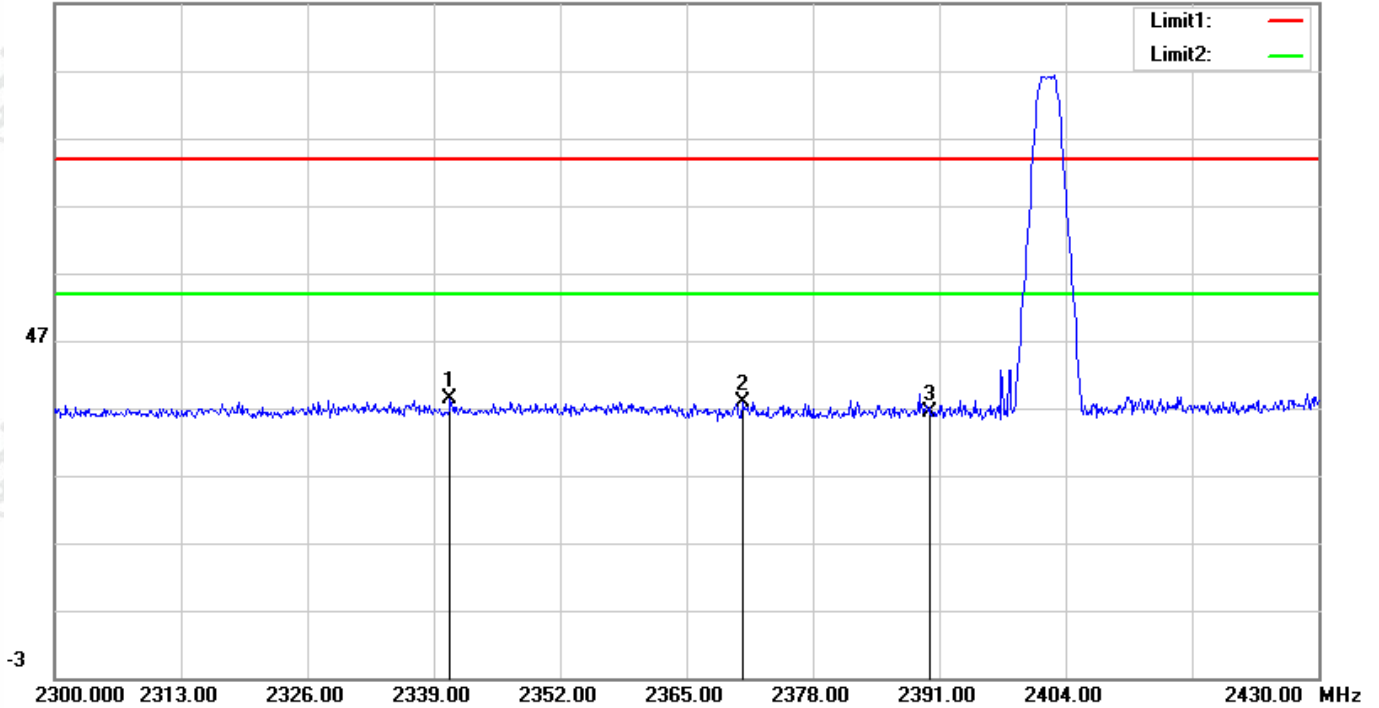


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2336.140	39.63	2.57	42.20	74.00	-31.80	100	312	peak
2	2365.390	39.67	2.65	42.32	74.00	-31.68	200	322	peak
3	2390.000	39.64	2.71	42.35	74.00	-31.65	100	309	peak

Mode:	BLE_2M	Channel:	2402
Remark:	Vertical	Test model No.:	HJH173 Ble

Test Graph

97.0 dBuV/m

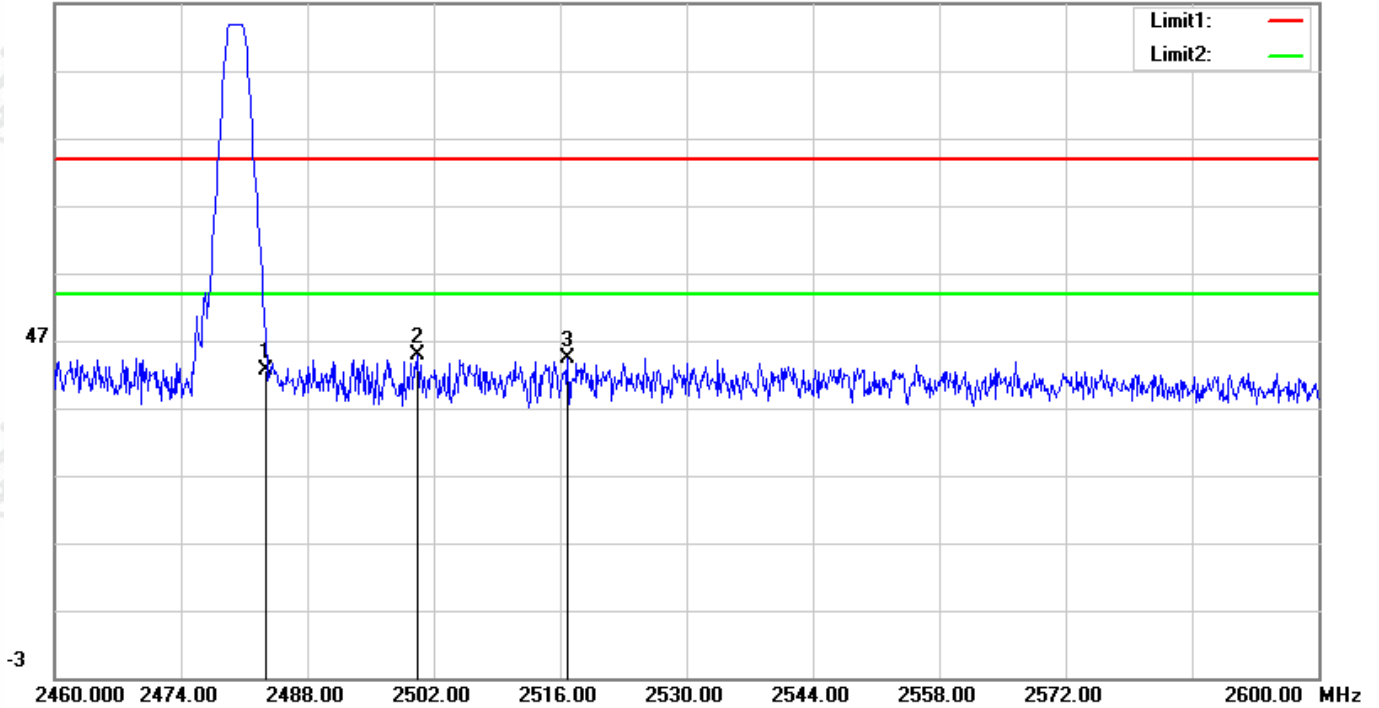


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2340.690	35.91	2.58	38.49	74.00	-35.51	200	331	peak
2	2370.720	35.22	2.66	37.88	74.00	-36.12	200	323	peak
3	2390.000	33.77	2.71	36.48	74.00	-37.52	200	278	peak

Mode:	BLE_2M	Channel:	2480
Remark:	Horizontal	Test model No.:	HJH173 Ble

Test Graph

97.0 dBuV/m

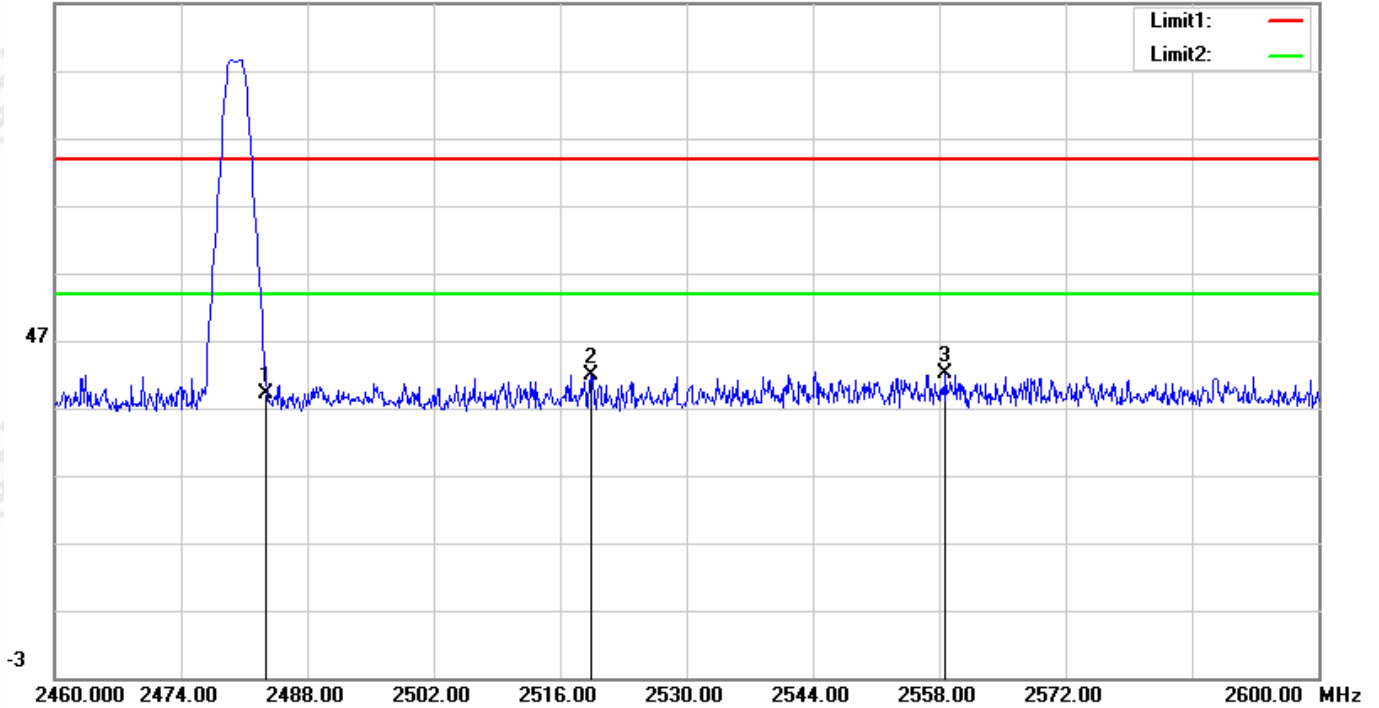


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	39.67	2.92	42.59	74.00	-31.41	200	309	peak
2	2500.180	41.86	2.95	44.81	74.00	-29.19	100	309	peak
3	2516.840	41.36	2.99	44.35	74.00	-29.65	100	309	peak

Mode:	BLE_2M	Channel:	2480
Remark:	Vertical	Test model No.:	HJH173 Ble

Test Graph

97.0 dBuV/m

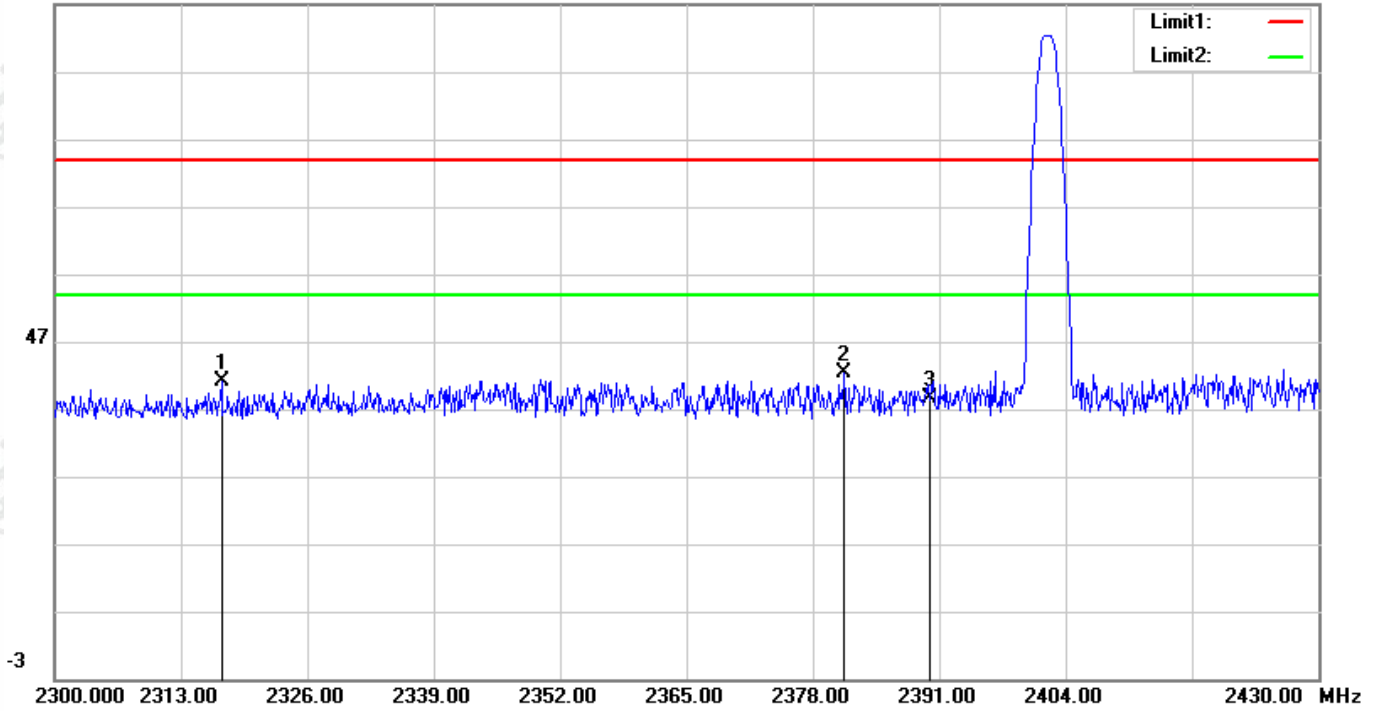


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	36.30	2.92	39.22	74.00	-34.78	200	348	peak
2	2519.500	38.85	2.99	41.84	74.00	-32.16	200	337	peak
3	2558.700	39.11	3.07	42.18	74.00	-31.82	200	348	peak

Mode:	BLE_125kbps	Channel:	2402
Remark:	Horizontal	Test model No.:	HJH173 Ble

Test Graph

97.0 dBuV/m

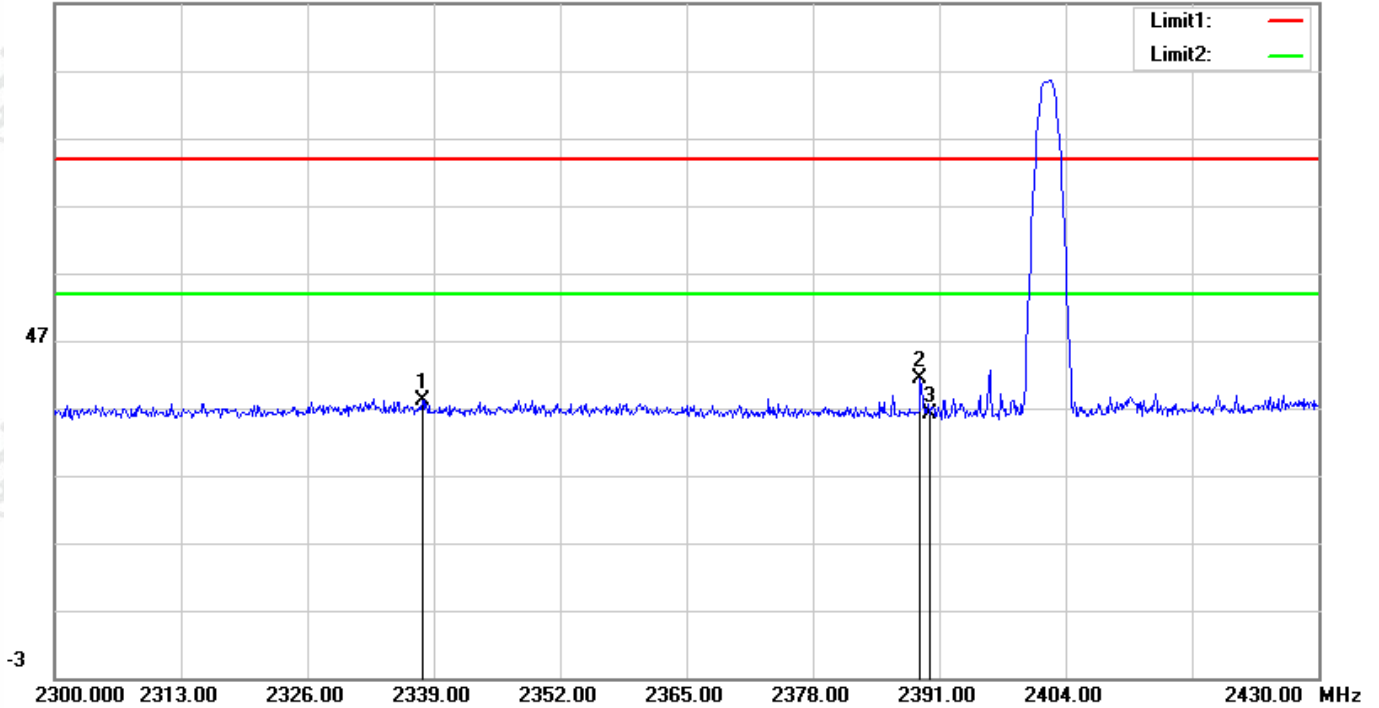


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2317.160	38.56	2.52	41.08	74.00	-32.92	200	299	peak
2	2381.250	39.75	2.69	42.44	74.00	-31.56	200	320	peak
3	2390.000	36.01	2.71	38.72	74.00	-35.28	200	253	peak

Mode:	BLE_125kbps	Channel:	2402
Remark:	Vertical	Test model No.:	HJH173 Ble

Test Graph

97.0 dBuV/m

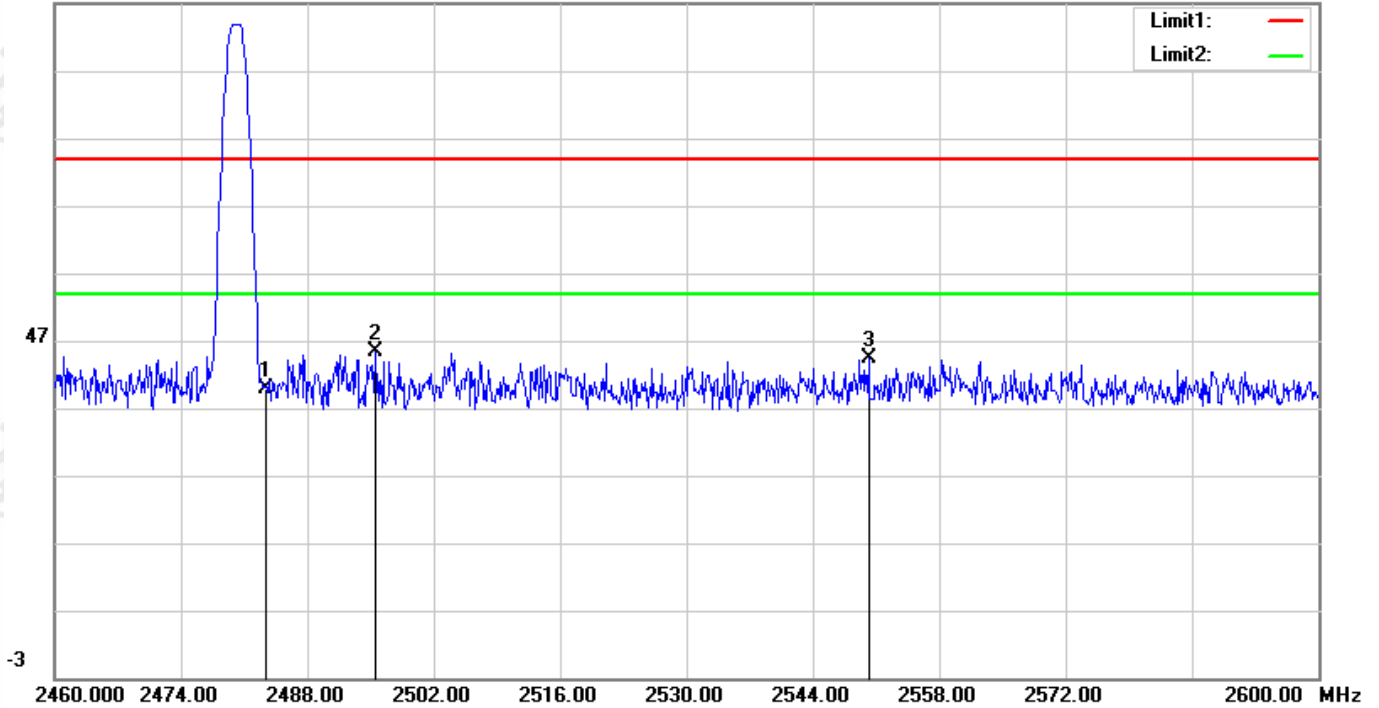


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2337.830	35.67	2.57	38.24	74.00	-35.76	100	90	peak
2	2389.050	38.60	2.71	41.31	74.00	-32.69	200	151	peak
3	2390.000	33.39	2.71	36.10	74.00	-37.90	200	270	peak

Mode:	BLE_125kbps	Channel:	2480
Remark:	Horizontal	Test model No.:	HJH173 Ble

Test Graph

97.0 dBuV/m

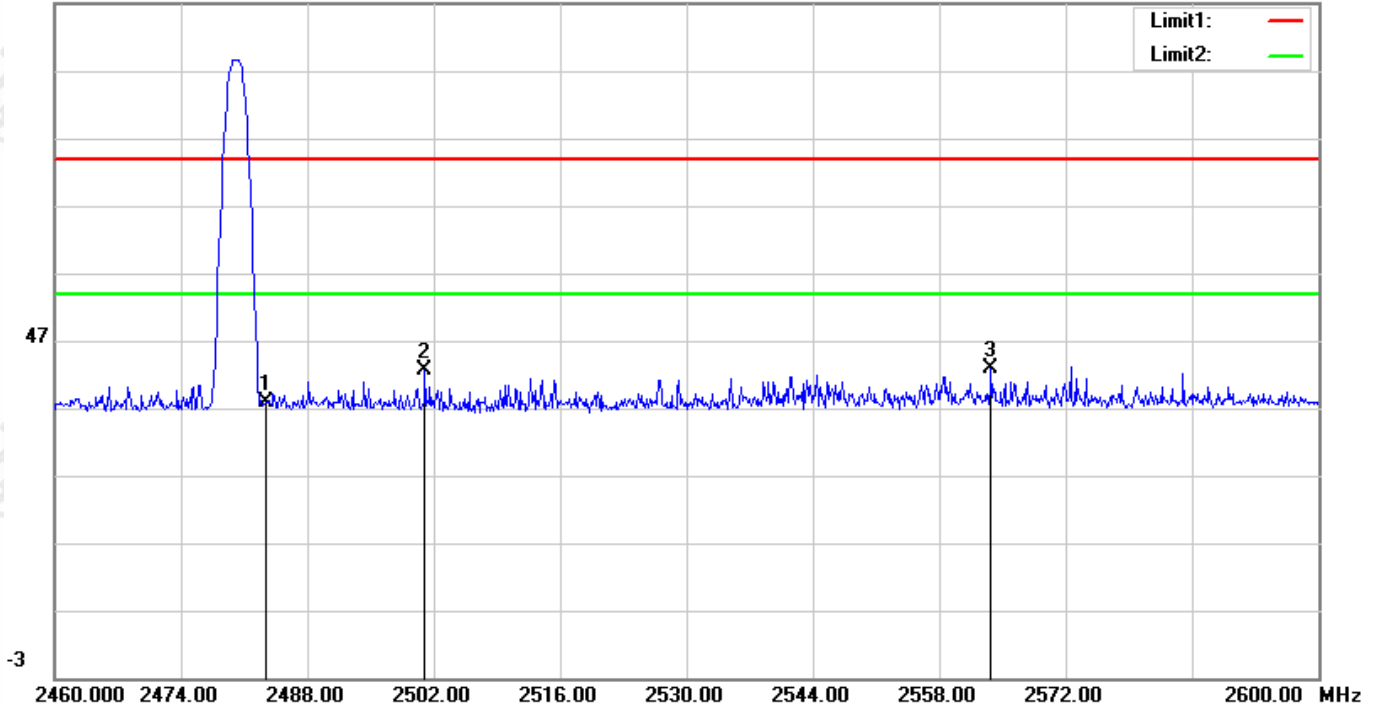


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	36.96	2.92	39.88	74.00	-34.12	100	312	peak
2	2495.560	42.40	2.94	45.34	74.00	-28.66	200	318	peak
3	2550.160	41.23	3.06	44.29	74.00	-29.71	200	318	peak

Mode:	BLE_125kbps	Channel:	2480
Remark:	Vertical	Test model No.:	HJH173 Ble

Test Graph

97.0 dBuV/m

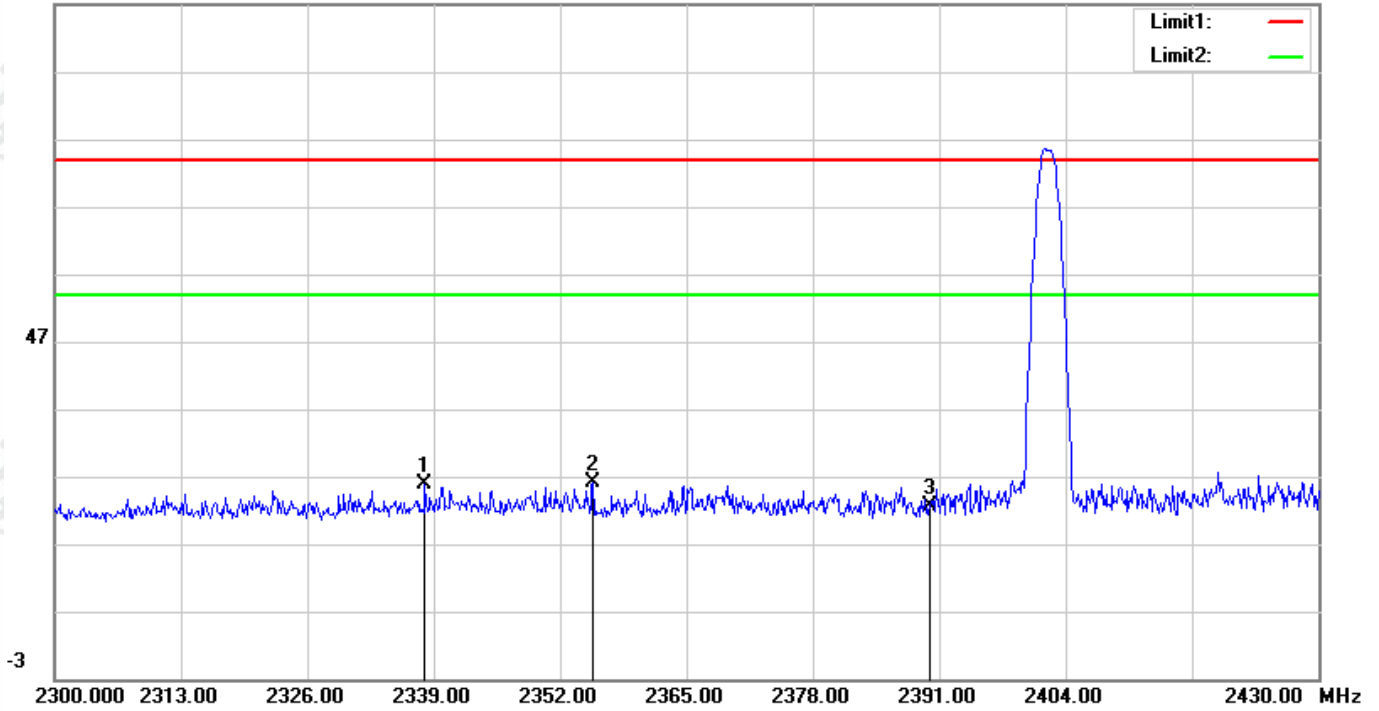


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	34.84	2.92	37.76	74.00	-36.24	100	55	peak
2	2501.020	39.65	2.95	42.60	74.00	-31.40	200	337	peak
3	2563.740	39.74	3.08	42.82	74.00	-31.18	200	330	peak

Mode:	BLE_500kpbs	Channel:	2402
Remark:	Horizontal	Test model No.:	HJH173 Ble

Test Graph

97.0 dBuV/m

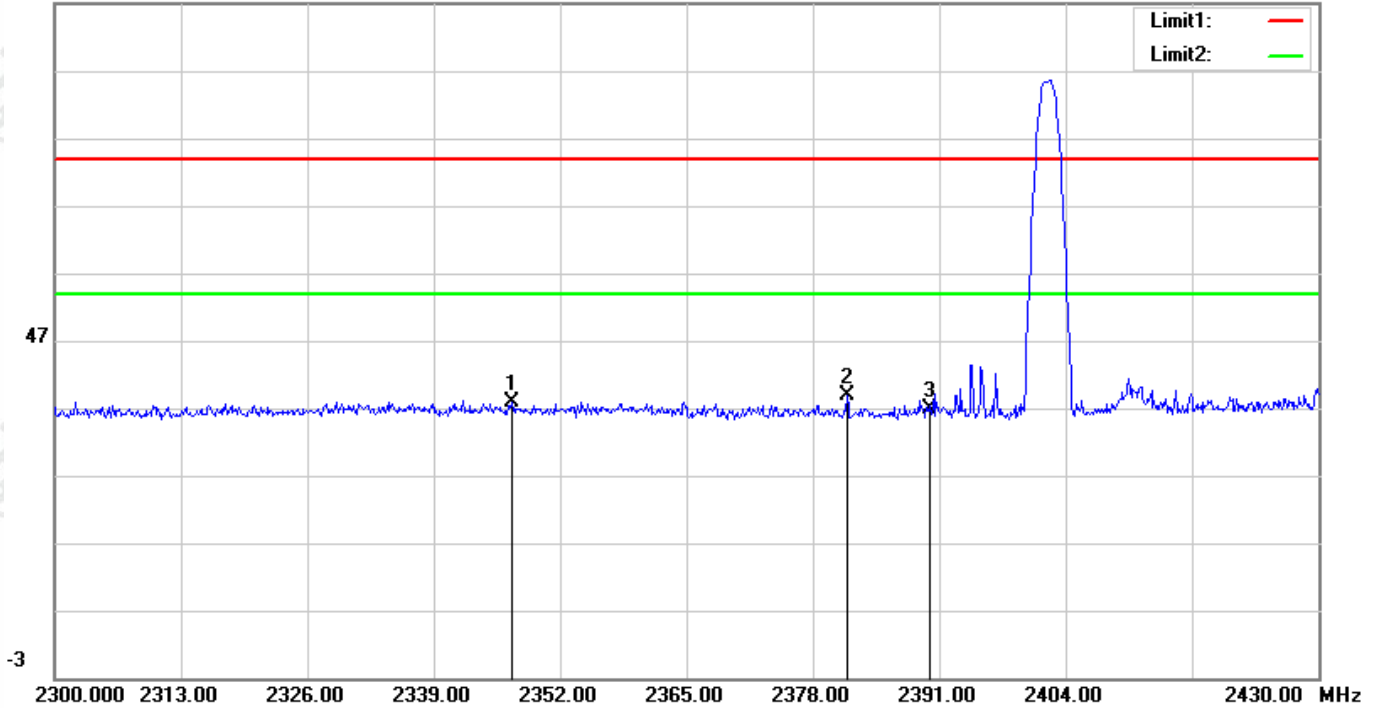


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2338.090	23.38	2.57	25.95	74.00	-48.05	200	337	peak
2	2355.380	23.61	2.62	26.23	74.00	-47.77	200	323	peak
3	2390.000	19.83	2.71	22.54	74.00	-51.46	200	220	peak

Mode:	BLE_500kbps	Channel:	2402
Remark:	Vertical	Test model No.:	HJH173 Ble

Test Graph

97.0 dBuV/m

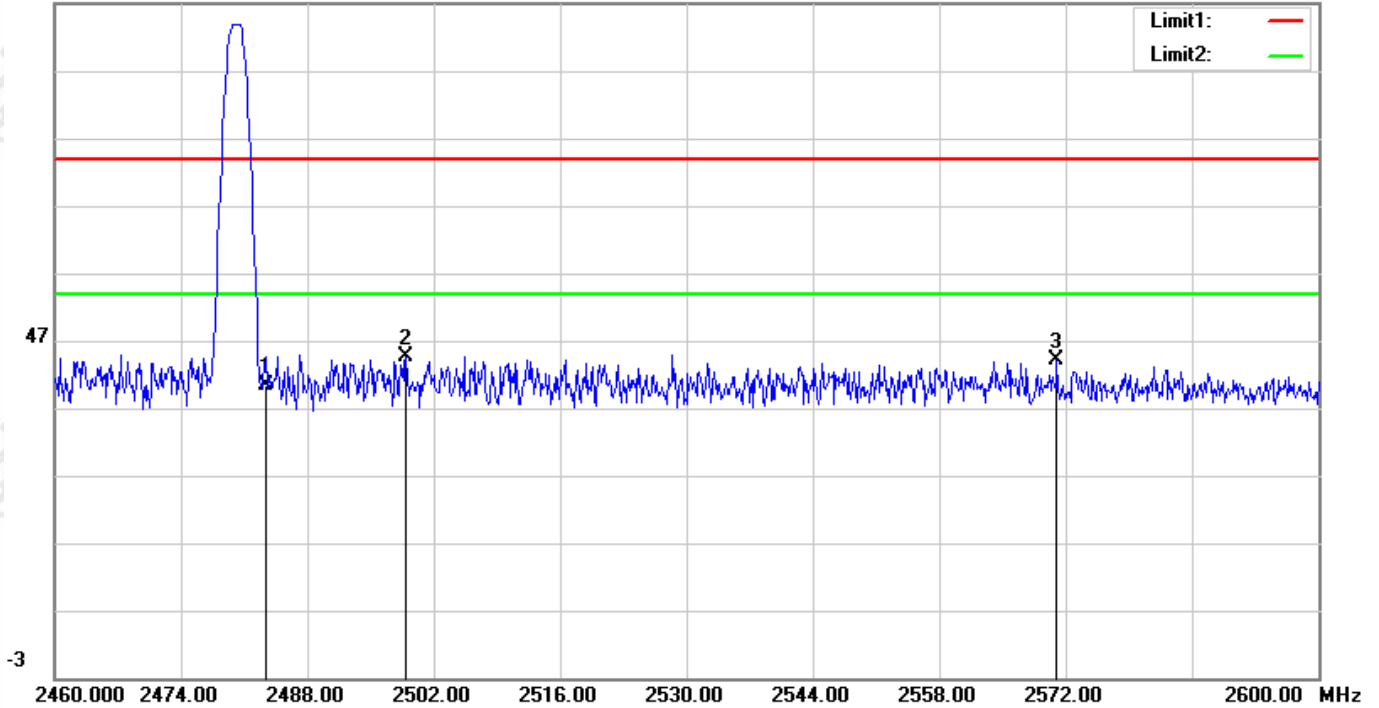


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2347.060	35.24	2.60	37.84	74.00	-36.16	100	31	peak
2	2381.510	36.19	2.69	38.88	74.00	-35.12	200	348	peak
3	2390.000	34.12	2.71	36.83	74.00	-37.17	200	360	peak

Mode:	BLE_500kbps	Channel:	2480
Remark:	Horizontal	Test model No.:	HJH173 Ble

Test Graph

97.0 dBuV/m

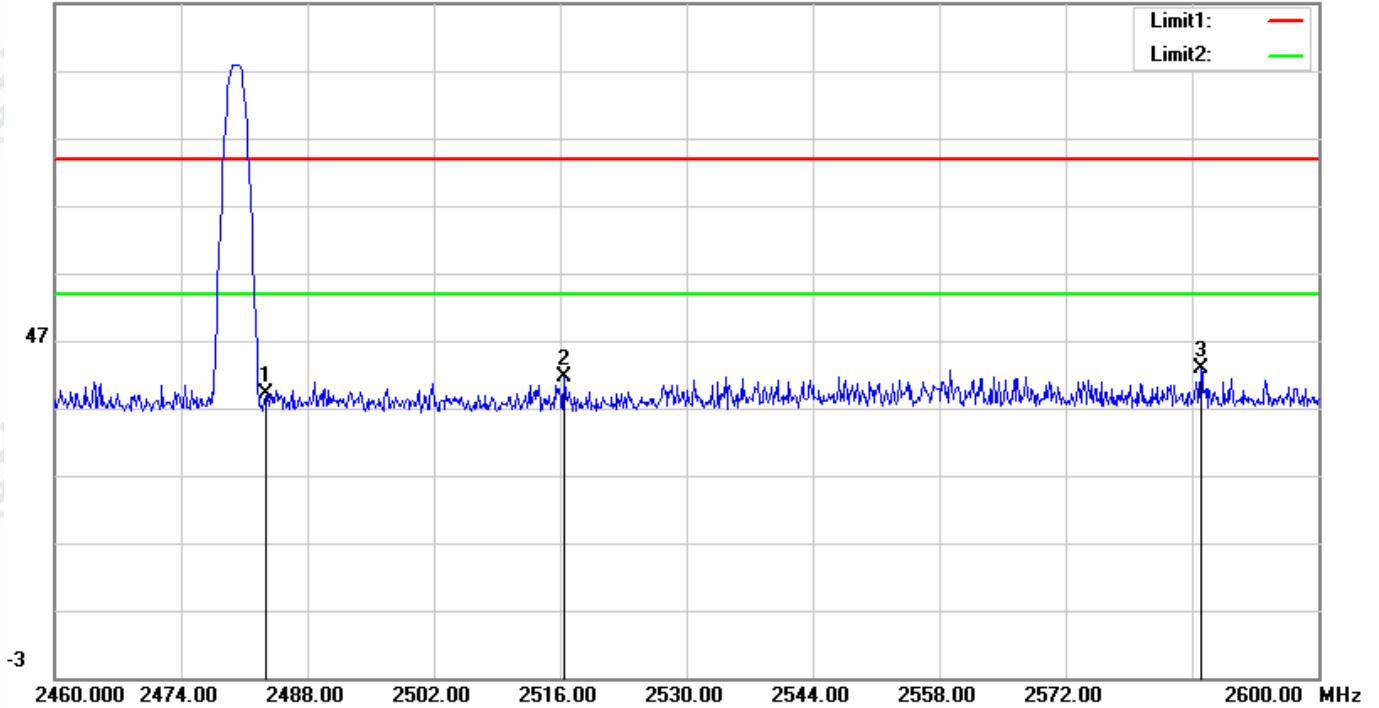


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	37.43	2.92	40.35	74.00	-33.65	100	308	peak
2	2498.920	41.63	2.95	44.58	74.00	-29.42	200	313	peak
3	2571.020	40.91	3.10	44.01	74.00	-29.99	200	317	peak

Mode:	BLE_500kbps	Channel:	2480
Remark:	Vertical	Test model No.:	HJH173 Ble

Test Graph

97.0 dBuV/m



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	2483.500	36.21	2.92	39.13	74.00	-34.87	200	345	peak
2	2516.420	38.68	2.98	41.66	74.00	-32.34	200	356	peak
3	2586.980	39.70	3.13	42.83	74.00	-31.17	194	0	peak

Note:

1)As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20dB under any condition of modulation. So, only the peak values are measured:

2) The field strength is calculated by adding the correct Factor. The basic equation with a sample calculation is as follows:

Final Test Level = Reading +Correct Factor

Correct Factor = Preamplifier Factor– Antenna Factor–Cable Factor

Appendix B): Radiated Spurious Emissions

Receiver Setup:	<table border="1"> <thead> <tr> <th>Frequency</th> <th>Detector</th> <th>RBW</th> <th>VBW</th> <th>Remark</th> </tr> </thead> <tbody> <tr> <td>0.009MHz-0.090MHz</td> <td>Peak</td> <td>10kHz</td> <td>30kHz</td> <td>Peak</td> </tr> <tr> <td>0.009MHz-0.090MHz</td> <td>Average</td> <td>10kHz</td> <td>30kHz</td> <td>Average</td> </tr> <tr> <td>0.090MHz-0.110MHz</td> <td>Quasi-peak</td> <td>10kHz</td> <td>30kHz</td> <td>Quasi-peak</td> </tr> <tr> <td>0.110MHz-0.490MHz</td> <td>Peak</td> <td>10kHz</td> <td>30kHz</td> <td>Peak</td> </tr> <tr> <td>0.110MHz-0.490MHz</td> <td>Average</td> <td>10kHz</td> <td>30kHz</td> <td>Average</td> </tr> <tr> <td>0.490MHz -30MHz</td> <td>Quasi-peak</td> <td>10kHz</td> <td>30kHz</td> <td>Quasi-peak</td> </tr> <tr> <td>30MHz-1GHz</td> <td>Quasi-peak</td> <td>120kHz</td> <td>300kHz</td> <td>Quasi-peak</td> </tr> <tr> <td rowspan="2">Above 1GHz</td> <td>Peak</td> <td>1MHz</td> <td>3MHz</td> <td>Peak</td> </tr> <tr> <td>Peak</td> <td>1MHz</td> <td>1/T</td> <td>Average</td> </tr> </tbody> </table>	Frequency	Detector	RBW	VBW	Remark	0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak	0.009MHz-0.090MHz	Average	10kHz	30kHz	Average	0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak	0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak	0.110MHz-0.490MHz	Average	10kHz	30kHz	Average	0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak	Above 1GHz	Peak	1MHz	3MHz	Peak	Peak	1MHz	1/T	Average
Frequency	Detector	RBW	VBW	Remark																																														
0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak																																														
0.009MHz-0.090MHz	Average	10kHz	30kHz	Average																																														
0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak																																														
0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak																																														
0.110MHz-0.490MHz	Average	10kHz	30kHz	Average																																														
0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak																																														
30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak																																														
Above 1GHz	Peak	1MHz	3MHz	Peak																																														
	Peak	1MHz	1/T	Average																																														
Test Procedure:	<p>Below 1GHz test procedure as below:</p> <ol style="list-style-type: none"> The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable was turned from 0 degrees to 360 degrees to find the maximum reading. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. <p>Above 1GHz test procedure as below:</p> <ol style="list-style-type: none"> Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter (Above 18GHz the distance is 1 meter and table is 1.5 meter). Test the EUT in the lowest channel, the middle channel, the Highest channel The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case. Repeat above procedures until all frequencies measured was complete. 																																																	
Limit:	<table border="1"> <thead> <tr> <th>Frequency</th> <th>Field strength microvolt/meter)</th> <th>Limit (dBμV/m)</th> <th>Remark</th> <th>Measurement distance (m)</th> </tr> </thead> <tbody> <tr> <td>0.009MHz-0.490MHz</td> <td>2400/F(kHz)</td> <td>-</td> <td>-</td> <td>300</td> </tr> <tr> <td>0.490MHz-1.705MHz</td> <td>24000/F(kHz)</td> <td>-</td> <td>-</td> <td>30</td> </tr> <tr> <td>1.705MHz-30MHz</td> <td>30</td> <td>-</td> <td>-</td> <td>30</td> </tr> <tr> <td>30MHz-88MHz</td> <td>100</td> <td>40.0</td> <td>Quasi-peak</td> <td>3</td> </tr> <tr> <td>88MHz-216MHz</td> <td>150</td> <td>43.5</td> <td>Quasi-peak</td> <td>3</td> </tr> <tr> <td>216MHz-960MHz</td> <td>200</td> <td>46.0</td> <td>Quasi-peak</td> <td>3</td> </tr> <tr> <td>960MHz-1GHz</td> <td>500</td> <td>54.0</td> <td>Quasi-peak</td> <td>3</td> </tr> <tr> <td>Above 1GHz</td> <td>500</td> <td>54.0</td> <td>Average</td> <td>3</td> </tr> </tbody> </table> <p>Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.</p>	Frequency	Field strength microvolt/meter)	Limit (dB μ V/m)	Remark	Measurement distance (m)	0.009MHz-0.490MHz	2400/F(kHz)	-	-	300	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30	1.705MHz-30MHz	30	-	-	30	30MHz-88MHz	100	40.0	Quasi-peak	3	88MHz-216MHz	150	43.5	Quasi-peak	3	216MHz-960MHz	200	46.0	Quasi-peak	3	960MHz-1GHz	500	54.0	Quasi-peak	3	Above 1GHz	500	54.0	Average	3				
Frequency	Field strength microvolt/meter)	Limit (dB μ V/m)	Remark	Measurement distance (m)																																														
0.009MHz-0.490MHz	2400/F(kHz)	-	-	300																																														
0.490MHz-1.705MHz	24000/F(kHz)	-	-	30																																														
1.705MHz-30MHz	30	-	-	30																																														
30MHz-88MHz	100	40.0	Quasi-peak	3																																														
88MHz-216MHz	150	43.5	Quasi-peak	3																																														
216MHz-960MHz	200	46.0	Quasi-peak	3																																														
960MHz-1GHz	500	54.0	Quasi-peak	3																																														
Above 1GHz	500	54.0	Average	3																																														

Report No. : EED39P80336801

Radiated Spurious Emissions test Data:

Radiated Emission below 1GHz:

Mode:	BLE_2M	Channel:	2402
Test model No.:	HJH55BA Ble		

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
63.9500	V	36.98	-17.02	19.96	40.00	-20.04	QP
134.7600	V	35.60	-16.19	19.41	43.50	-24.09	QP
366.5900	V	31.94	-12.44	19.50	46.00	-26.50	QP
549.9200	V	31.63	-7.84	23.79	46.00	-22.21	QP
758.4700	V	29.90	-5.11	24.79	46.00	-21.21	QP
903.0000	V	31.05	-2.37	28.68	46.00	-17.32	QP
54.2500	H	33.64	-15.07	18.57	40.00	-21.43	QP
99.8400	H	33.71	-16.16	17.55	43.50	-25.95	QP
399.5700	H	31.84	-11.59	20.25	46.00	-25.75	QP
635.2800	H	30.83	-6.49	24.34	46.00	-21.66	QP
794.3600	H	30.35	-4.47	25.88	46.00	-20.12	QP
932.1000	H	30.35	-2.37	27.98	46.00	-18.02	QP

Notes:

1) Through Pre-scan then find the BLE_2M -CH1 is the worst case mode and only the worst data was recorded.

Transmitter Emission above 1GHz:

Mode:	BLE_1M	Channel:	2402
Test model No.:	HJH55BA Ble		

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	7205.000	37.92	12.01	49.93	74.00	-24.07	100	176	peak
2	12016.000	33.21	17.08	50.29	74.00	-23.71	200	249	peak
3	16895.000	27.29	25.31	52.60	74.00	-21.40	200	273	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	3975.000	40.77	7.75	48.52	74.00	-25.48	200	152	peak
2	12016.000	34.10	17.08	51.18	74.00	-22.82	100	339	peak
3	16640.000	28.39	24.41	52.80	74.00	-21.20	200	274	peak

Mode:	BLE_1M	Channel:	2440
Test model No.:	HJH55BA Ble		

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	7324.000	38.70	12.20	50.90	74.00	-23.10	100	188	peak
2	12203.000	33.10	17.63	50.73	74.00	-23.27	200	251	peak
3	16946.000	27.33	25.49	52.82	74.00	-21.18	100	240	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	3992.000	42.07	7.83	49.90	74.00	-24.10	100	195	peak
2	9755.000	34.59	14.75	49.34	74.00	-24.66	152	0	peak
3	15994.000	29.63	23.62	53.25	74.00	-20.75	200	60	peak

Mode:	BLE_1M	Channel:	2480
Test model No.:	HJH55BA Ble		

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4961.000	37.54	9.51	47.05	74.00	-26.95	200	216	peak
2	7443.000	45.75	12.35	58.10	74.00	-15.90	114	0	peak
3	7443.000	26.21	12.35	38.56	54.00	-15.44	114	0	AVG
4	10214.000	30.45	15.15	45.60	74.00	-28.40	100	221	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4961.000	36.49	9.51	46.00	74.00	-28.00	200	233	peak
2	7443.000	41.76	12.35	54.11	74.00	-19.89	100	176	peak
3	7443.000	27.92	12.35	40.27	54.00	-13.73	100	176	AVG
4	9925.000	31.77	14.61	46.38	74.00	-27.62	100	176	peak

Mode:	BLE_2M	Channel:	2402
Test model No.:	HJH55BA Ble		

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4808.000	38.08	9.16	47.24	74.00	-26.76	100	183	peak
2	7205.000	38.46	12.01	50.47	74.00	-23.53	100	176	peak
3	15892.000	28.96	23.38	52.34	74.00	-21.66	200	308	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	3992.000	41.05	7.83	48.88	74.00	-25.12	200	140	peak
2	9602.000	33.38	14.87	48.25	74.00	-25.75	112	0	peak
3	15994.000	29.60	23.62	53.22	74.00	-20.78	100	2	peak

Mode:	BLE_2M	Channel:	2440
Test model No.:	HJH55BA Ble		

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4876.000	39.46	9.31	48.77	74.00	-25.23	100	190	peak
2	12203.000	33.01	17.63	50.64	74.00	-23.36	200	249	peak
3	16929.000	27.43	25.43	52.86	74.00	-21.14	200	347	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	3992.000	42.65	7.83	50.48	74.00	-23.52	200	150	peak
2	7324.000	38.12	12.20	50.32	74.00	-23.68	100	170	peak
3	16946.000	27.66	25.49	53.15	74.00	-20.85	123	0	peak

Mode:	BLE_2M	Channel:	2480
Test model No.:	HJH55BA Ble		

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4961.000	38.72	9.51	48.23	74.00	-25.77	100	169	peak
2	7443.000	45.23	12.35	57.58	74.00	-16.42	154	0	peak
3	7443.000	27.33	12.35	39.68	54.00	-14.32	154	0	AVG
4	9925.000	31.40	14.61	46.01	74.00	-27.99	200	274	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	3975.000	40.84	7.75	48.59	74.00	-25.41	200	100	peak
2	4961.000	38.29	9.51	47.80	74.00	-26.20	100	229	peak
3	7443.000	39.80	12.35	52.15	74.00	-21.85	100	108	peak
4	9925.000	33.10	14.61	47.71	74.00	-26.29	200	230	peak

Mode:	BLE_125kbps	Channel:	2402
Test model No.:	HJH55BA Ble		

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4791.000	37.17	9.12	46.29	74.00	-27.71	100	196	peak
2	7205.000	37.37	12.01	49.38	74.00	-24.62	100	156	peak
3	15994.000	28.79	23.62	52.41	74.00	-21.59	200	215	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	3975.000	41.74	7.75	49.49	74.00	-24.51	100	41	peak
2	12016.000	34.72	17.08	51.80	74.00	-22.20	100	338	peak
3	16521.000	29.12	24.16	53.28	74.00	-20.72	200	94	peak

Mode:	BLE_125kbps	Channel:	2440
Test model No.:	HJH55BA Ble		

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4876.000	37.57	9.31	46.88	74.00	-27.12	100	183	peak
2	7324.000	43.45	12.20	55.65	74.00	-18.35	100	183	peak
3	7324.000	28.88	12.20	41.08	54.00	-12.92	100	183	AVG
4	15943.000	29.12	23.50	52.62	74.00	-21.38	100	102	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	3975.000	42.22	7.75	49.97	74.00	-24.03	100	191	peak
2	12203.000	32.16	17.63	49.79	74.00	-24.21	100	173	peak
3	16895.000	27.79	25.31	53.10	74.00	-20.90	200	261	peak

Mode:	BLE_125kbps	Channel:	2480
Test model No.:	HJH55BA Ble		

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4961.000	36.35	9.51	45.86	74.00	-28.14	100	216	peak
2	7443.000	45.69	12.35	58.04	74.00	-15.96	118	360	peak
3	7443.000	27.50	12.35	39.85	54.00	-14.15	118	360	AVG
4	14889.000	29.28	22.95	52.23	74.00	-21.77	129	360	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4961.000	36.38	9.51	45.89	74.00	-28.11	100	214	peak
2	7443.000	41.18	12.35	53.53	74.00	-20.47	100	179	peak
3	9925.000	35.69	14.61	50.30	74.00	-23.70	100	176	peak

Mode:	BLE_500kbps	Channel:	2402
Test model No.:	HJH55BA Ble		

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4808.000	37.92	9.16	47.08	74.00	-26.92	100	183	peak
2	7205.000	38.71	12.01	50.72	74.00	-23.28	100	176	peak
3	14804.000	30.20	22.84	53.04	74.00	-20.96	200	158	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4808.000	36.88	9.16	46.04	74.00	-27.96	100	190	peak
2	7205.000	35.55	12.01	47.56	74.00	-26.44	100	175	peak
3	12016.000	33.62	17.08	50.70	74.00	-23.30	100	334	peak
4	14906.000	29.47	22.97	52.44	74.00	-21.56	126	0	peak

Mode:	BLE_500kbps	Channel:	2440
Test model No.:	HJH55BA Ble		

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	7324.000	39.22	12.20	51.42	74.00	-22.58	142	360	peak
2	12203.000	30.67	17.63	48.30	74.00	-25.70	116	360	peak
3	15994.000	29.08	23.62	52.70	74.00	-21.30	100	226	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	3992.000	39.87	7.83	47.70	74.00	-26.30	200	157	peak
2	7324.000	39.67	12.20	51.87	74.00	-22.13	100	148	peak
3	16997.000	27.85	25.67	53.52	74.00	-20.48	100	314	peak

Mode:	BLE_500kbps	Channel:	2480
Test model No.:	HJH55BA Ble		

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4961.000	38.44	9.51	47.95	74.00	-26.05	100	0	peak
2	7443.000	45.89	12.35	58.24	74.00	-15.76	100	338	peak
3	7443.000	31.61	12.35	43.96	54.00	-10.04	100	338	AVG
4	14889.000	31.05	22.95	54.00	74.00	-20.00	200	15	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4961.000	36.32	9.51	45.83	74.00	-28.17	200	202	peak
2	7443.000	41.64	12.35	53.99	74.00	-20.01	100	296	peak
3	7443.000	27.63	12.35	39.98	54.00	-14.02	100	296	AVG
4	9925.000	32.37	14.61	46.98	74.00	-27.02	100	180	peak

Radiated Emission below 1GHz:

Mode:	BLE_2M	Channel:	2402
Test model No.:	HJH173 Ble		

Frequency (MHz)	Ant. Pol. (H/V)	Reading (dBUV)	Correction Factor (dB/m)	Result (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Remark
59.1000	V	36.56	-16.04	20.52	40.00	-19.48	QP
143.4900	V	38.61	-16.20	22.41	43.50	-21.09	QP
350.1000	V	33.18	-12.86	20.32	46.00	-25.68	QP
620.7300	V	31.22	-6.56	24.66	46.00	-21.34	QP
807.9400	V	30.61	-4.21	26.40	46.00	-19.60	QP
902.0300	V	31.23	-2.37	28.86	46.00	-17.14	QP
51.3400	H	33.27	-14.48	18.79	40.00	-21.21	QP
99.8400	H	36.13	-16.16	19.97	43.50	-23.53	QP
470.3800	H	31.91	-9.76	22.15	46.00	-23.85	QP
668.2600	H	30.49	-6.32	24.17	46.00	-21.83	QP
896.2100	H	30.01	-2.45	27.56	46.00	-18.44	QP
950.5300	H	30.29	-2.36	27.93	46.00	-18.07	QP

Notes:

- 1) Through Pre-scan then find the BLE_2M -CH1 is the worst case mode and only the worst data was recorded.

Transmitter Emission above 1GHz:

Mode:	BLE_1M	Channel:	2402
Test model No.:	HJH173 Ble		

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4808.000	36.68	9.16	45.84	74.00	-28.16	100	158	peak
2	7205.000	41.06	12.01	53.07	74.00	-20.93	100	170	peak
3	16912.000	27.95	25.37	53.32	74.00	-20.68	100	141	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4791.000	37.13	9.12	46.25	74.00	-27.75	200	200	peak
2	7205.000	36.42	12.01	48.43	74.00	-25.57	200	163	peak
3	16623.000	28.85	24.35	53.20	74.00	-20.80	200	1	peak

Mode:	BLE_1M	Channel:	2440
Test model No.:	HJH173 Ble		

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4876.000	37.43	9.31	46.74	74.00	-27.26	100	169	peak
2	7324.000	43.28	12.20	55.48	74.00	-18.52	100	172	peak
3	7324.000	30.06	12.20	42.26	54.00	-11.74	100	172	AVG
4	14668.000	31.01	22.49	53.50	74.00	-20.50	200	220	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	3992.000	41.94	7.83	49.77	74.00	-24.23	100	203	peak
2	7324.000	36.07	12.20	48.27	74.00	-25.73	100	300	peak
3	15994.000	29.30	23.62	52.92	74.00	-21.08	100	0	peak

Mode:	BLE_1M	Channel:	2480
Test model No.:	HJH173 Ble		

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4961.000	39.99	9.51	49.50	74.00	-24.50	100	175	peak
2	7443.000	46.35	12.35	58.70	74.00	-15.30	100	183	peak
3	7443.000	29.22	12.35	41.57	54.00	-12.43	100	183	AVG
4	14073.000	31.42	21.61	53.03	74.00	-20.97	120	360	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4961.000	37.28	9.51	46.79	74.00	-27.21	200	302	peak
2	7443.000	41.84	12.35	54.19	74.00	-19.81	100	274	peak
3	7443.000	29.63	12.35	41.98	54.00	-12.02	100	274	AVG
4	15433.000	30.40	22.80	53.20	74.00	-20.80	200	117	peak

Mode:	BLE_2M	Channel:	2402
Test model No.:	HJH173 Ble		

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4791.000	37.27	9.12	46.39	74.00	-27.61	200	349	peak
2	7205.000	39.49	12.01	51.50	74.00	-22.50	100	175	peak
3	17014.000	27.71	25.67	53.38	74.00	-20.62	100	220	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	3975.000	41.40	7.75	49.15	74.00	-24.85	200	161	peak
2	7205.000	33.05	12.01	45.06	74.00	-28.94	100	141	peak
3	14889.000	29.57	22.95	52.52	74.00	-21.48	200	356	peak

Mode:	BLE_2M	Channel:	2440
Test model No.:	HJH173 Ble		

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4876.000	37.17	9.31	46.48	74.00	-27.52	100	160	peak
2	7324.000	40.68	12.20	52.88	74.00	-21.12	100	173	peak
3	14991.000	30.03	23.08	53.11	74.00	-20.89	200	0	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	3992.000	41.90	7.83	49.73	74.00	-24.27	100	200	peak
2	6627.000	35.05	11.36	46.41	74.00	-27.59	100	143	peak
3	14889.000	30.41	22.95	53.36	74.00	-20.64	200	182	peak

Mode:	BLE_2M	Channel:	2480
Test model No.:	HJH173 Ble		

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4961.000	39.70	9.51	49.21	74.00	-24.79	100	188	peak
2	7443.000	40.56	12.35	52.91	74.00	-21.09	100	180	peak
3	14906.000	30.48	22.97	53.45	74.00	-20.55	200	237	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	3975.000	39.65	7.75	47.40	74.00	-26.60	100	191	peak
2	7443.000	38.62	12.35	50.97	74.00	-23.03	100	165	peak
3	16929.000	28.09	25.43	53.52	74.00	-20.48	100	185	peak

Mode:	BLE_125kbps	Channel:	2402
Test model No.:	HJH173 Ble		

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4808.000	37.56	9.16	46.72	74.00	-27.28	100	162	peak
2	7205.000	37.48	12.01	49.49	74.00	-24.51	100	157	peak
3	14889.000	30.02	22.95	52.97	74.00	-21.03	200	238	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	3992.000	36.88	7.83	44.71	74.00	-29.29	200	279	peak
2	7205.000	35.85	12.01	47.86	74.00	-26.14	100	167	peak
3	15331.000	29.55	22.89	52.44	74.00	-21.56	200	297	peak

Mode:	BLE_125kbps	Channel:	2440
Test model No.:	HJH173 Ble		

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4876.000	36.59	9.31	45.90	74.00	-28.10	100	159	peak
2	7324.000	40.21	12.20	52.41	74.00	-21.59	100	156	peak
3	15994.000	29.09	23.62	52.71	74.00	-21.29	100	40	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	3992.000	39.65	7.83	47.48	74.00	-26.52	200	98	peak
2	7324.000	38.36	12.20	50.56	74.00	-23.44	100	163	peak
3	15518.000	30.24	22.76	53.00	74.00	-21.00	117	0	peak

Mode:	BLE_125kbps	Channel:	2480
Test model No.:	HJH173 Ble		

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4961.000	39.12	9.51	48.63	74.00	-25.37	100	191	peak
2	7443.000	48.07	12.35	60.42	74.00	-13.58	100	174	peak
3	7443.000	33.63	12.35	45.98	54.00	-8.02	100	174	AVG
4	14906.000	30.05	22.97	53.02	74.00	-20.98	100	330	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	3992.000	40.07	7.83	47.90	74.00	-26.10	200	73	peak
2	7443.000	38.36	12.35	50.71	74.00	-23.29	100	131	peak
3	15994.000	29.02	23.62	52.64	74.00	-21.36	132	0	peak

Mode:	BLE_500kbps	Channel:	2402
Test model No.:	HJH173 Ble		

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4808.000	37.14	9.16	46.30	74.00	-27.70	100	164	peak
2	7205.000	38.38	12.01	50.39	74.00	-23.61	100	166	peak
3	14906.000	29.91	22.97	52.88	74.00	-21.12	192	360	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	3992.000	43.01	7.83	50.84	74.00	-23.16	200	144	peak
2	7205.000	35.72	12.01	47.73	74.00	-26.27	100	162	peak
3	16283.000	29.19	23.82	53.01	74.00	-20.99	141	360	peak

Mode:	BLE_500kbps	Channel:	2440
Test model No.:	HJH173 Ble		

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4876.000	36.71	9.31	46.02	74.00	-27.98	100	154	peak
2	7324.000	44.76	12.20	56.96	74.00	-17.04	100	174	peak
3	7324.000	31.05	12.20	43.25	54.00	-10.75	100	174	AVG
4	14906.000	30.16	22.97	53.13	74.00	-20.87	100	32	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	3992.000	41.55	7.83	49.38	74.00	-24.62	200	199	peak
2	7324.000	38.96	12.20	51.16	74.00	-22.84	100	168	peak
3	14787.000	30.33	22.81	53.14	74.00	-20.86	108	360	peak

Mode:	BLE_500kbps	Channel:	2480
Test model No.:	HJH173 Ble		

Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4961.000	40.12	9.51	49.63	74.00	-24.37	200	161	peak
2	7443.000	47.12	12.35	59.47	74.00	-14.53	100	174	peak
3	7443.000	32.23	12.35	44.58	54.00	-9.42	100	174	AVG
4	16572.000	29.57	24.23	53.80	74.00	-20.20	182	0	peak

Vertical

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	4961.000	37.59	9.51	47.10	74.00	-26.90	100	309	peak
2	7443.000	38.85	12.35	51.20	74.00	-22.80	100	273	peak
3	16317.000	29.24	23.88	53.12	74.00	-20.88	150	0	peak

Note:

1)As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. So, only the peak values are measured:

2) The field strength is calculated by adding the correct Factor. The basic equation with a sample calculation is as follows:

Final Test Level = Reading +Correct Factor

Correct Factor = Preamplifier Factor– Antenna Factor–Cable Factor

3) Scan from 9kHz to 25GHz, the disturbance above 18GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.